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Errata appears on following page.

Bulletins on disease subjects written for farmers and "popular" articles of a similar nature are not included in the *Veterinary Bulletin*. Those of a sufficiently important nature are, however, included in *Index Veterinarius*; so also are certain review articles, presidential addresses, congress proceedings, etc., where the title conveys as much information as could be given in an abstract of a few lines. For information of this nature, readers of the *Veterinary Bulletin* are referred to *Index Veterinarius*, where titles of all publications indexed by the bureau are fully cross-referenced.

A list of annotations and reviews, classified according to subject, is now given in *Index Veterinarius*, being inserted at the end of each number. Such papers will not necessarily be dealt with in the *Veterinary Bulletin*.

The Editor will be glad to receive publications relating to Veterinary Science and cognate subjects in order that they may be dealt with in the *Veterinary Bulletin*.

Reports of Departments, Special Reports, reprints, etc., etc., should be sent as soon as they are issued.

Books for Review.

The Editor will be glad to receive books for review in the *Veterinary Bulletin*.

Errata

V.B. **17.** 114, abst. 509. For "in Y [ug.] or less", read "in γ [ug.] or less".

V.B. **17.** 124, abst. 550. For first sentence, read "H. describes the use of oblique light for recognition of dissociation phases in *Brucella* cultures".

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DISEASES CAUSED BY BACTERIA AND FUNGI

VACCARO, H., PÉREZ, M. M., & SEPÚLVEDA, J. (1943.) Contribución al estudio del género Staphylococcus. **[Contribution to the study of the genus *Staphylococcus*.]**—*Rev. Chile. Hig. Med. prev.* **5.** 231–251. [English summary.] **739**

After surveying previous work, the authors examined seven factors for their value differentiating pathogenic from non-pathogenic types of staphylococci. These were pigment production in agar, fermentation of agar-mannitol, colour change in agar-bromo-thymol, haemolytic action in rabbit blood and human blood agar, power to coagulate citrated blood, coagulation of milk and liquefaction of gelatin.

The milk and gelatin tests were found to be of minor value and the human blood test was abandoned. The four remaining tests were applied to 627 strains, *viz*, 446 *Staph. aureus*, 73 *Staph. citreus* and 53 *Staph. albus*, all from diseased tissues, and to 55 strains from saprophytic sources.

The strains examined were divided into five groups. In group I, strains were positive to all the above tests, in group II they were positive to three and in group III, positive to two of the tests. 93% of the strains from diseased tissues fell into groups I & II, while none of those from saprophytic sources did so.

54 *Staph. aureus* and 14 *Staph. citreus strains* from diseased tissue were negative to the haemolysis test and would therefore have been classed as probably non-pathogenic, but since they were positive to three other tests, the authors class them as definitely pathogenic.—R. MACGREGOR.

SHRIGLEY, E. W. (1945.) **The agglutination of *Staphylococcus aureus* in the presence of normal or influenza virus-infected mouse lung filtrates and of chorio-allantoic fluids.**—*Yale J. Biol. Med.* **18.** 81–102. **740**

Certain strains of staphylococci were agglutinated by normal allantoic fluid from eggs incubated for 10–13 days and by fluids infected with influenza A virus. The reaction was observed by adding 0·05 ml. of a 6–8-hour broth culture to varying dilutions of egg fluid at pH 8·0. Most of the experiments were carried out with two strains, *viz*, Wood and Craig. The former was not agglutinated by either normal or virus-infected fluid, but the latter was sensitive to normal fluids in dilutions varying from 1 : 8 to 1 : 32 and to infective fluids from 1 : 16 to 1 : 64. The statistical analysis suggests that infected fluids have a greater capacity to agglutinate than have normal fluids.

A similar phenomenon was observed with mouse lung filtrates. The Wood strain was insensitive, while agglutination of the Craig strain was at first only partial with normal lung filtrates but became more apparent in lung filtrates from mice which had been inoculated with filtrates of the lungs from other normal mice.

Heat-killed cultures were agglutinated as readily as living organisms. Heating the egg fluid at 56°C. for 2–5 min. destroyed the agglutinating property. Forty-eight staphylococci from different sources were tested: 41 only were agglutinated.

The reaction in infective preparations was not apparently due to the virus, since fluids adsorbed with red cells were still active whilst the eluates containing the virus were inactive. S. discusses the possibility that the reaction was due to a component normally present in eggs and in mouse lungs and increased in amount by the action of the virus.—R. E. GLOVER.

MUNCH-PETERSEN, E., CHRISTIE, R., SIMMONS, R. T., & BEDDOME, H. A. (1945.) **Further notes on a lytic phenomenon shown by Group B streptococci.**—*Aust. J. exp. Biol. med. Sci.* **23.** 193–195. **741**

Two hundred strains of Group B streptococci tested produced a filtrable, thermostable agent which lysed sheep or ox red cells in the presence of staphylococcus β toxin. Streptococci other than Group B either did not produce this agent or did so to a negligible degree.

During this work it was found that not all

samples of sheep or ox blood were suitable for the preparation of blood agar to demonstrate production of β-toxin by staphylococci. Those which were not suitable had a high content of β antitoxin.—N. WICKHAM.

HARE, T. (1946.) **Beta haemolytic streptococcus infection in dogs.**—*Vet. Rec.* **58.** 177–180. Discussion pp. 180–182. **742**

H. surveyed the clinical findings in 400 cases of β-haemolytic streptococcus infection in dogs over a period of ten years. The disease is said to be endemic in Great Britain and to be highly contagious. It is said to occur in an animal in cycles of approximately six months and to be manifested clinically in a variety of forms. The sequelae of the infection are dealt with at length and are said to include such syndromes as ovarian, kidney and leucopoietic dysfunction. Treatment, prophylaxis and differential diagnosis are dealt with.

A lengthy discussion followed, dealing mainly with the clinical features of these conditions. Questions were raised dealing with pathogenesis and the nature of any experimental evidence in support of the author's statements.—A. R. J.

KOCH, S. O. (1940.) Forekomsten af β-haemolyserende Streptokokker i Handelsmaelk. **[Occurrence of β-haemolytic streptococci in market milk.]**—*Maanedsskr. Dyrlaeger.* **52.** 185–204. **743**

During 1938–39, systematic examinations for β-haemolytic streptococci were performed on the raw milk sold in the town of Aarhus, Denmark, which has about 100,000 inhabitants. Milk from 253 of 352 herds from which samples were constantly taken was found to be infected with these organisms. They disappeared from the milk of 70 herds after they had been examined clinically and bacteriologically and cows which were secreting the organisms from the udder had been segregated. In 19 herds, so many cows were affected that their milk had to be totally eliminated from the town's supply. Ten herds had to be eliminated for other reasons. Group B streptococci (*Str. agalactiae*) seemed to be the most important organisms concerned. After this attention to the herds supplying milk to the town the milk was delivered almost free of β-haemolytic streptococci; this facilitated the demonstration in the milk of organisms pathogenic to human beings when such organisms were present.—H. C. B.

JOHNSON, H. P., & BRYAN, C. S. (1946.) **The efficacy of the microscopic examination of the incubated producer milk samples in detecting streptococcic mastitis in dairy herds.**—*J. Milk Technol.* **9.** 197–201 & 248. [Authors' summary copied *verbatim.*] **744**

A total of 863 cows in 83 herds were checked for the presence of streptococcic mastitis by the collection and examination of individual cow samples of milk. Of these 78·3 percent of the herds and 21·9 percent of the cows were found to be infected.

Producer samples of milk were collected on the same day from each of these dairy herds and examined microscopically, following incubation, for the presence of long chain streptococci. An analysis of these results indicates that:

1. In 60 herds a positive producer sample indicated accurately the presence of streptococcic mastitis, as verified by the examination of individual cow samples from each herd.

2. In four herds positive producer sample results were not verified on examination of cow samples. Since these producer samples were taken out of the weigh tank, the possibility of contamination from a previous infected sample is suggested. To overcome this source of contamination, producer samples should be collected directly from the cans.

3. In five herds a negative producer sample result was not confirmed upon examination of the individual cow samples because in four herds one infected cow was found and in the fifth herd two were located. No explanation is offered for these results.

4. In the remaining 14 herds the negative producer sample results accurately indicated the freedom of the herd from streptococcic mastitis as confirmed by the results of individual cow testing.

VALENTE, J. S. (1945.) Um caso de botriomicose no cavalo? **[A case of suspected botryomycosis in a horse.]**—*Rev. Med. vet., Lisboa.* **40.** 54–60. **745**

V. describes briefly a case diagnosed clinically as botryomycosis. He examined the lesions bacteriologically and isolated an atypical strain of *Staphylococcus aureus.* An autogenous vaccine is said to have given good results.—H. G. A.

VAN DEINSE, F. (1946.) Dissociation d'une souche de bacilles tuberculeux virulents de type bovin "dysgonique" en une variante avirulente également—"dysgonique" et une variante virulente "eugonique" après séjour prolongé dans un liquide pleural de cobaye. **[Dissociation in a bovine type of *M. tuberculosis* after prolonged contact with g. pig pleural fluid.]**—*Ann. Inst. Pasteur.* **72.** 424–426. **746**

A fully virulent, dysgonic culture of the bovine type inoculated mediastinally into g. pigs, provoked the formation of a large amount of pleural fluid apparently free from acid-fast bacilli. This fluid was added to 5% citrate solution and

incubated for a year. Numerous tubercle bacilli which appeared to be undergoing lysis were found.

Subcultivation on Löwenstein medium gave rise to a rough, eugonic strain which was of normal virulence for the g. pig, whereas subcultures on Laporte's medium produced a smooth, dysgonic culture which was completely avirulent.
—R. E. GLOVER.

FITE, G. L., & OLSON, B. J. (1944.) **The infectivity of mycobacteria for chorioallantoic membranes of chick embryos.**—*Publ. Hlth Rep., Wash.* **59.** 1423–1436. **747**

The authors studied the infectivity of 46 strains of acid-fast bacilli on the chorio-allantoic membranes of chick embryos in order to see if the extent of the lesions so produced was related to the virulence for guinea pigs. Most of the strains studied were typical human type *M. tuberculosis*, but two avian and one bovine type were included in the series.

Nine-day-old embryos were employed and the membranes were harvested six days after inoculation with doses of 1·0 and 0·01 mg. bacilli in 0·2 ml. of 0·9 % saline. These doses represented respectively the minimum level which consistently produced large lesions in the membranes of most embryos inoculated with virulent organisms and the level which still produced some lesions with virulent organisms, the lesions varying according to the virulence of the organism.

Organisms of high virulence for g. pigs produced extensive characteristic lesions of the mesoderm of the chorio-allantois. The character of the lesions varied with the type of organism, those due to the avian and bovine types being histologically distinct from those caused by the human type bacilli.

The response of the chorio-allantois was constant for a given strain or species of organism. However, the response to avirulent acid-fast bacilli varied too much for the method to be of value by itself in assessing the virulence of the strain.—D. L. HUGHES.

CHRISTOFFERSEN, P. A., OTTOSEN, H. E., & THOMSEN, K. G. (1940.) Om Fluorescensmikroskopi. Undersøgelser med saerligt Henblik paa Paavisning af syrefaste Bakterier. **[Fluorescence microscopy: use for acid-fast bacteria.]**—*Maanedsskr. Dyrlaeger.* **52.** 429–448. **748**

The authors examined 1,525 milk samples, 692 samples of uterine discharge, 277 samples of bronchial secretion, and 150 specimens of lymph nodes from swine. Smear preparations were fixed by flame and impregnated with auramin according to the method of HAGEMANN (1938); in microscopic examinations the filter described by KELLER (1938) was used. The examinations made in this way were compared with the results of microscopic examinations of classic Ziehl-Neelsen preparations. It was found that acid-fast bacteria could be most easily detected in milk; discharges from the uterus and lungs and lymph node smears were less satisfactory. Slightly more positive samples were detected by fluorescence microscopy than by the Ziehl-Neelsen method; in control examinations, however, the additional cases recorded as positive by the fluorescence method were not definitely positive by Ziehl-Neelsen staining.—H. C. BENDIXEN.

STOCKMAYER, W. (1942.) Technik und Anwendungsbereich der Komplementbindungsmethode zur Feststellung der Eutertuberkulose. **[The use of the complement-fixation test for the diagnosis of TB. of the udder.]**—*Z. InfektKr. Haustiere.* **59.** 16–24. **749**

The c.-f. test carried out on milk samples with Witebsky antigen is not reliable for the diagnosis of udder TB. Nevertheless, S. considers the test of value for supporting clinical diagnosis.—E. KLIENEBERGER-NOBEL.

WILLIS, H. S. (1943.) **Desensitization in tuberculosis.**—*Yale J. Biol. Med.* **15.** 453–457. **750**

The relationship between allergy and immunity in TB. is discussed, with particular reference to the controversy as to whether the allergic response should be considered as an antigen-antibody reaction. Workers who consider that allergy and immunity should be divorced, base their arguments on desensitization experiments. A short period of desensitization after re-infection of experimental animals is associated with little or no gross disease: allergy is abolished, but immunity may remain and the usual picture of experimental TB. is lacking. W. points out that such observations apply to short-term experiments and that if desensitization experiments are carried out for as long as 4–5 months, an entirely different picture is presented. In a large proportion of the desensitized animals a peculiar type of bronchopneumonia develops. Certain alveoli and terminal bronchioles are filled with poly-morphonuclear leucocytes and large mononuclear cells. Caseation, necrosis and tissue destruction do not occur and the lesions contain abundant tubercle bacilli, contrasting strongly with normally infected g. pigs, in which only a few tubercles are seen, with occasionally a demonstrable tubercle bacillus. The liver and spleen of infected control g. pigs are enlarged with many discrete tubercles, while in the desensitized animal these organs are lightly infected.

The desensitized g. pig has lost its allergy, and, in the long run, its immunity. No explana-

tion for the phenomenon can be offered at present, but the observation is of importance in any theories which attempt to elucidate allergic mechanisms.—A. B. PATERSON.

STEENKEN, W., Jr., & GARDNER, L. U. (1943.) **Vaccinating properties of avirulent dissociates of five different strains of tubercle bacilli.**—*Yale J. Biol. Med.* **15.** 393–402. **751**

In order to enhance the low natural resistance of g. pigs and rabbits to TB., variants of five different strains of tubercle bacilli, thoroughly proved avirulent, were tested for their efficiency as vaccines.

Vaccinated animals received by subcutaneous injection 5×10^4 bacilli of homologous and heterologous strains and were permitted to die of TB., or were killed after 20 months. Although considerable variation occurred in survival time between one vaccinated group and another, the extent of the disease was essentially the same in the first and last members to die in each group. It is felt that testing of new chemotherapeutic agents in such vaccinated, subsequently infected, animals, would give a more accurate picture of their efficacy, since the natural degree of variation in organ involvement is greatly reduced as compared with that in infected, non-vaccinated g. pigs. —A. B. PATERSON.

BEIJERS, J. A. (1940.) Tuberculose bij het paard. **[TB. in the horse.]**—*Tijdschr. Diergeneesk.* **67.** 1001–1010. [English, French and German summaries.] **752**

Five cases of TB. in horses are described.

BELLER, K. (1944.) Untersuchungen über Ziegentuberkulose. (IV. Kontagiosität und Bekämpfung.) **[Research on caprine TB. IV. Its contagious nature and control.]**—*Arch. wiss. prakt. Tierheilk.* **78.** 463–472. [For previous parts, see *V. B.* **12.** 567.] **753**

During 1941–44, B. observed 17 further cases of TB. in goats, all due to bovine type infection. From his experience, however, it seems that goats living on farms with tuberculous cattle have no great tendency to contract the disease from them: out of 38 infected farms containing both species, goats and cattle were affected in only 14; in one farm goats only, and in 23 farms cattle only were affected. Nevertheless, goats have no particular resistance to infection.

Tuberculin and complement-fixation tests were carried out on several goats, some of which were examined P.M.; the c.-f. test appeared to be more accurate. [No details of the tuberculin and the test method are given.]

It was demonstrated experimentally that TB. could spread from goat to goat quite easily by contact and that it was easily controlled by simple methods of isolation.—J. E.

PETERSEN, W. W. (1940.) Hud- og Muskeltuberkulose hos en aeldre So samt Tuberkulose i Mavesaekkens Vaeg hos et almindeligt Slagterisvin. **[Skin and muscle TB. in an old sow and TB. of the stomach in a slaughter pig.]** —*Maanedsskr. Dyrlaeger.* **52.** 94–100. **754**

In the skin of the old sow, especially in the flank, were many caseous tuberculous nodules up to the size of a pea, as well as cicatrices and sinuses. The local (subiliac) lymph node was also tuberculous. In the deep muscles of the abdominal wall of the flank region there were caseous nodules as large as walnuts in considerable numbers. Lesions were found in the lungs, pleura, liver, spleen, kidneys and skeleton. In the pyloric region of the stomach of an apparently healthy pig, a rather extended nodulated tuberculous infiltration was found situated mainly in the muscularis layer and the submucosa; the mucous membrane was intact. In the subserous tissue many nodules could be seen and palpated from the peritoneal side of the stomach. Numerous nodules were present in the liver. The lesions were due to avian type tubercle bacilli.—H. C. BENDIXEN.

JESPERSEN, K. W. (1940.) Tilfaelde af Tuberkulose hos Svin paa et Svineslagteri gennem tre Aar. **[TB. in swine as seen over a period of three years at an abattoir.]**—*Maanedsskr. Dyrlaeger.* **52.** 20–29 & 33–40. **755**

A series of type determinations was carried out on over 2,000 of 13,577 cases of TB. found in swine slaughtered in 1937–39 inclusive at Odense abattoir. 90·4% of cases were caused by the avian type bacilli and derived from 883 herds. Bovine type strains were found in 9·5% of the cases. Three cases of TB. caused by human type bacilli were found.—R. PETER JONES.

CHRISTENSEN, A. N. (1941.) Undersøgelser vedrørende Svinetuberkulosens Forekomst og Smitteveje samt Forsøg paa Bekaempelse af Svinetuberkulose inden for et Slagteris Omraade. **[Investigation into the incidence of porcine TB. and an attempt to control it in a unit area.]**—*Maanedsskr. Dyrlaeger.* **52.** 485–511, 517–537 & 541–569. **756**

During 1936–39, C. investigated the area served by a co-operative swine abattoir in southern Jutland. In this area there was TB. in a relatively large number of the herds and it was found that the TB. in the pigs was generally derived from cattle or poultry on the farm concerned. The percentage of TB. among bacon pigs during the first year of the survey was 6–7, and the corresponding figure for sows and boars was 29·8.

Avian infection occurred in 1·8% of the bacon pigs and bovine type infection in 4·9%. On farms with pigs with bovine type infection it was often possible to demonstrate that infection originated from cows with TB. of the genital organs, the udder, or the lungs. Only in rare cases was there probability of infection from pig to pig. Infection was more often found in small herds than in large ones, which is explained by the fact that on the small farms cattle and pigs often shared the same byre. Manure heaps from cattle were a dangerous source of infection for pigs. Bovine type infections were found mostly during the winter months, while avian type infection appeared almost equally frequently all the year round. The only way to get rid of TB. among swine appears to be total eradication of the disease from cattle and poultry. Clinical examination followed by segregation of obviously diseased cattle will, however, in many cases be followed by disappearance of the infection from swine on the farm. Isolation of infected poultry may also be an adequate preventive measure with regard to infection of swine. In the period under consideration, the percentage of TB. in swine decreased to 4·5.—H. C. Bendixen.

I. *Urquijo, C. A. (1941.) **[Effect of bile on the virulence of the avian tubercle bacillus.]**—*Rev. Soc. argent. Biol.* **17.** 165–167. **757**

II. *Urquijo, C. A. (1941.) **[Early dissociation of a strain of avian tubercle bacillus.]**—*Ibid.* 168–170. **758**

[Absts. in *Brit. Chem. Physiol. Abstr.* A., III. Feb. 1942. p. 177, copied *verbatim.*]

I. Two strains of bacilli were isolated from the spleen of hens with natural tuberculosis. They were cultivated in potato-glycerin and potato-bile media. After 5 years of repeated passage the glycerin culture maintained its original virulence; but the bile culture lost almost all virulence for hens and rabbits.

II. An avian strain of tubercle bacillus was isolated from a hen's liver on Löwenstein-Saenz medium. On a potato-glycerin broth medium rough colonies were seen which developed luxuriantly. A specimen was taken and weighed and by dilution fractions of 0·01 μg. were sown in each of 10 tubes; at the 14th day *R* colonies made their appearance and on the 23rd day *S* colonies were seen. These were isolated and each type kept its character indefinitely on being resown on potato-glycerin broth.

Sigurdsson, B. (1946.) **A specific antigen recovered from tissue infected with *M. paratuberculosis* (Johne's bacillus). II. Studies on the nature of the antigen and on methods for demasking it.**—*J. Immunol.* **53.** 127–135. [For previous article, see *V. B.* **16.** 181.] **759**

In the previous article it was noted that an antigen capable of fixing complement is present in a masked form in the intestinal mucosa of sheep infected with Johne's disease and can only be activated after appropriate treatment.

In the tests now described the most suitable antigen was obtained by boiling a suspension of dried sheep mucosa for one hour at pH 8·5, centrifuging and adjusting the supernatant to pH 7·2. Treatment with ether prior to boiling was not necessary, but the antigen was not freed unless the dried mucosa had been ground to a very fine powder.

The antigen was precipitated from solution by 2% trichloracetic acid: the sediment after solution reacted positively to the Biuret test for protein. The active principle was not thrown out by a 20%–saturated solution of ammonium sulphate, but was completely removed by 50% saturation.—R. E. Glover.

Ottosen, H. E. (1940.) Om den kulturelle Diagnosticering af Corynebakterieninfektioner i Svinets Halslymfekirtler. **[Cultural diagnosis of corynebacterial infection in the lymph nodes of the neck of swine.]**—*Maanedsskr. Dyrlaeger.* **52.** 81–94. **760**

O. compared the results of cultivating *Corynebact. equi* from the submandibular lymph nodes of pigs on (a) Löwenstein's or Besredka's medium, after treatment of material with 5% sulphuric acid, (b) broth-peptone-agar, to which had been added 0·0075% sodium tellurite, and (c) ordinary broth-peptone-agar.

When material was fresh, the three methods of cultivation were nearly equal in value, although the tellurite medium was slightly inferior. Results from the last two media together were a little better than those from the first. When material was contaminated, the first medium was better than the others, probably because the material had been treated with the acid. Ordinary agar was suitable for fresh uncontaminated material.
—H. C. Bendixen.

Pfeiffer, D. H., & Viljoen, N. F. (1945.) **Diphtheria and mastitis.**—*J. S. Afr. vet. med. Ass.* **16.** 148–152. **761**

The authors record an outbreak of diphtheria in an isolated community and produce evidence associating this outbreak with cases of mastitis in a herd which supplied milk to the affected families. They claim to have recovered *Corynebact. diphtheriae* from two cows affected with mastitis, but failed to trace the source of infection in these animals, although it seemed that on occasions the two cows had a common milker. Restrictions on the use of milk from the two animals were imposed

and finally the owners were persuaded to have the animals slaughtered.

The authors conclude that when investigating an outbreak of diphtheria the connexion between an apparently simple mastitis in cows and human diphtheria should not be overlooked. The financial and other difficulties which they encountered in their efforts to get rid of the affected animals lead them to urge that the provisions of the Stock Diseases Act of the Union of S. Africa be amended to embrace all infectious and contagious diseases transmissible from animals to man.—P. L. LEROUX.

COX, C. D., & ARBOGAST, J. L. (1945.) **Melioidosis.**—*Amer. J. clin. Path.* **15.** 567–570. **762**

This is an account of a fatal case of *Pfeifferella whitmori* infection in an American soldier, with a description of the P.M. findings and the cultural characters of the organism. The soldier had served in Burma and Assam and was said to have been in charge of mules, some of which had died following an undiagnosed illness. There is a discussion of this disease since its first description as a glanders-like disease by WHITMORE & KRISHNASWAMI in Rangoon in 1910.

[Veterinary interest in this disease, which is nearly always fatal in man, lies in the close relationship between the causal organism and *Pf. mallei*, the causal organism of glanders, and also in the fact that while the disease is principally one of rats and other rodents, the organism has been recovered from domestic animals, *viz*, horses, cattle (one case), swine, dogs and cats. In the discussion by the authors it is stated that NICHOLLS (1930) in Ceylon showed that the organism lacked pathogenicity for horses and cattle. This is not quite correct. Nicholls did not work with horses: he isolated the organism in pure culture from a splenic abscess from a naturally occurring case in a cow in a Colombo dairy. When he injected culture material subcutaneously into a cow and two calves, they developed local lesions which eventually healed. There was no severe systemic reaction. (The abstractor had given the pus from the splenic abscess in the cow to Nicholls and was in touch with his experiments with the cow and two calves.) STANTON, FLETCHER & SYMONDS (1929) isolated this organism in Malaya from a transient nasal discharge in a horse. The conclusion that the organism lacks pathogenicity for horses and cattle should be accepted with reserve.]

—M. C.

KÖBE, K. (1944.) Experimentelle Untersuchungen über den Impfrotlauf bein Schwein. [**"Inoculation erysipelas" in pigs immunized by the method of Lorenz.**]—*Dtsch. tierärztl. Wschr./Tierärztl. Rdsch.* **52/50.** 318–322. **763**

Though experience has shown that serum-culture immunization against swine erysipelas is a harmless procedure in healthy pigs, "inoculation erysipelas" has been repeatedly observed in certain districts. K.'s investigations revealed that several strains from such outbreaks were harmless to swine even when injected in large doses and without simultaneous application of antiserum. He therefore points out that a second factor must be responsible for the outbreaks. In 1942, K. found a virus causing an infectious gastro-enteritis in pigs, which is endemic in certain districts, usually remains a latent infection, but may cause sudden death by heart failure in some animals. The virus circulates in the blood at the beginning of the infection. If infected animals are among the stock and immunization is performed without resterilization of the hypodermic needle, the disease may be transferred to a number of animals which will then develop "inoculation erysipelas". Infection with this virus is often symptomless.—E. K.-N.

BIRCH, R. R., GILMAN, H. L., & STONE, W. S. (1945.) **The immunity created by vaccination of calves with Brucella abortus strain 19.**—*Cornell Vet.* **35.** 110–122. **764**

The authors studied over a term of years the immunizing value of strain 19 in a large herd in which calves were vaccinated at 4–8 months of age. Controls were maintained, systematic examinations were made of milk and uterine contents, and monthly blood tests were performed. A frequent natural exposure to infection was ensured and regular contact with known spreaders tended constantly to reinforce the immunity.

The examination lasted over a period of six pregnancies and the results are analysed in a series of tables. Vaccinated animals had a higher percentage of live calves, a lower abortion rate and a lower incidence of spread of infection at calving times than the controls.

Vaccination prevented some infection and mitigated its effects. It also delayed its development, the abortion peak occurring at the fourth pregnancy in the vaccinated animals and in the first and second pregnancies in the controls. It failed to prevent brucellosis in a surprisingly high percentage of vaccinated animals (53·34% infected), but in this regard was superior to the controls (66·67% infected). There was a lower percentage of uterine infection in the vaccinated animals, but the difference between these and the controls was not wide. There was no constant relation between the peak of the agglutination titres and the subsequent resistance of the animal. One animal did not react to the aggln. test although vaccinated twice, but proved resistant and completed four pregnancies without infection.

—S. J. GILBERT.

AGABABYAN, M. M. (1940.) O vospriimchivosti buĭvolov k brutsellezu. **[The susceptibility of buffaloes to brucellosis.]**—*Veterinariya, Moscow.* No. 4. pp. 53–58. [French summary.] **765**

Experiments were carried out with the bovine type of *Br. abortus*. Four female buffaloes 3–4 months in calf were kept under observation for 6–7 months. Three were given foodstuffs infected by culture three times daily for three days; the 4th animal was infected subcutaneously. There were no clinical symptoms or rise of temperature. After the eighth day the agglutination titre was 1 : 100 in one animal infected *per os*; this increased to 1 : 600. The animal infected by subcutaneous injection reacted at 1 : 400; the remaining two did not respond. There was only one abortion, which occurred in the seventh month of pregnancy. *Br. abortus* was isolated from the foetus and was present in the milk and urine of the dam. The remaining animals produced healthy calves, which were negative to the aggln. test. All four animals were killed at the end of the experiment; P.M. there were no pathological findings and brucella were not isolated from the organs.

In a group of 860 buffaloes in contact at pasture with a herd of infected cows, the results of aggln. tests were as follows:

Dilutions Used	*No. of Buffaloes Reacting*	*Percentage Reactors*
1 : 10	414	48·2%
1 : 25	137	16·0%
1 : 50	16	1·8%
1 : 100	6	0·7%
1 : 200 and higher	17	1·9%
Negative	270	31·4%
Total	860	100%

There was no clinical evidence of infection in these in-contact buffaloes. Intradermal tests (in the caudal fold) were carried out in the herd and only seven buffaloes reacted out of 860.—O. U.

TROPA, E. (1942.) Da dispersão das bruceloses animais no norte do País. **[Incidence of brucellosis in animals in Northern Portugal.]**—*Bol. pec., Lisboa.* **10.** No. 1. 65–71. **766**

The Laboratory of Veterinary Pathology at Oporto, Portugal, was opened in 1936, in which year about 150 agglutination tests for brucellosis were carried out on cattle, with 19% positive reactions and 6% doubtful. In 1937, of 1,000 samples, 6·4% were found to be positive and 8% doubtful.

Of 75 tests on goats in Oporto, 6·6% were positive and 13% doubtful. Of 99 tests performed at Braganza, 1% were positive and 6% doubtful. Of 311 tests performed at Tabuaço, 15·5% were positive and 3% doubtful. Of 119 tests performed at Tarouca, 4% were positive and 3% doubtful.

In 1941, of 1,000 tests made on pigs from the region of Douro, 0·9% were positive and 2% were doubtful.—J. H.

PURRIEL, P., RISSO, R., & ESPASANDIN, J. (1945.) Diagnostico biologico de la brucelosis humana. **[Biological diagnosis of brucella infection in man.]**—*Arch. urug. Med.* **26.** 134–143. [Abst. from English summary.] **767**

The authors give a short review of the biological reactions in acute, chronic, and mild brucella infections.—S. J. GILBERT.

SCRIVNER, L. H. (1941.) **The examination of colostrum and milk for the presence of Brucella abortus and its agglutinin.**—*J. Colo.-Wyo. Acad. Sci.* **3.** 15. [Only abst. given.] **768**

A study was made of the colostrum and milk of 28 first-calf heifers vaccinated as calves with strain 19 and of 21 unvaccinated control heifers. A high degree of infection was maintained during the gestation periods. At the time of calving, five vaccinated and nine unvaccinated heifers were eliminating *Br. abortus* in the colostrum whilst agglutinins were present in the colostrum of 18 vaccinated and 15 unvaccinated heifers. Blood tests revealed six reactors and eight suspects in the vaccinated and 13 reactors and one suspect in the controls. In later tests, *Br. abortus* and agglutinins were not found in the milk of the vaccinated heifers except in one case, whereas 11 controls had *Br. abortus* and agglutinins for significant periods of time.—S. J. GILBERT.

SAPHRA, I., & WASSERMANN, M. (1945.) **Serological relationship amongst salmonella and other Enterobacteriaceae.**—*J. Immunol.* **50.** 221–227. **769**

The relationships between the complex antigenic structures of *S. onderstepoort* and *S. carrau* and the antigens of *Shigella*, *Escherichia* and *Proteus* have been demonstrated by the authors and other workers. The authors discuss the ontogenesis of these two salmonellas and emphasize that for exact typing, full advantage should be taken of all available biochemical and serological methods.—A. BUXTON.

LEVINE, N. D., PETERSON, E. H., & GRAHAM, R. (1945.) **Studies on swine enteritis. II. Salmonella and other enteric organisms isolated from diseased and normal swine.**—*Amer. J. vet. Res.* **6.** 242–246. [Authors' summary copied *verbatim.*] [For part I, see *V. B.* **15.** 308.] **770**

In a study of 227 swine presented for autopsy and diagnosis, approximately 55 per cent of which showed gross inflammatory lesions of the lower intestinal tract, Salmonella organisms were isolated from 30 or 13 per cent of the total and from 21 or 17 per cent of those showing gross intestinal lesions. Organisms classifying in other genera of the enteric group, namely, non-gas-formers (Eberthella-like and Shigella-like species), members of the Proteus and Paracolon groups, and a further group not classified according to genus, were isolated from 153 of these swine. Organisms from the five enteric groups were not isolated from 65, or 29 per cent of the total number of pigs. Of these 65 animals, 25 or a little over 38 per cent, showed gross lesions of the lower digestive tract.

Salmonella choleraesuis, var. *kunzendorf*, was the only organism isolated with consistency from the viscera. It is indicated, therefore, that of all bacterial groups and species, this organism may be the only one with marked invasive powers, and that the other species of Salmonella and the groupings of the enteric organisms found, may represent primarily intestinal forms, perhaps normal to the healthy porcine digestive tract.

The pathogenicity of *S. choleraesuis* var. *kunzendorf* and *Salmonella typhimurium* was demonstrated by feeding large amounts of the culture. These experimental observations on pathogenesis do not exclude other possible etiologic factors in sporadic enteritis in swine.

Salmonella bareilly, *Salmonella give*, *Salmonella illinois*, Eberthella-like, Shigella-like, Proteus, and Paracolon species and the unclassified group termed "slight gas formers" proved non-pathogenic to pigs following large doses by the mouth.

Of 194 strains of Salmonella organisms isolated from swine submitted for autopsy over a period of four years, 134 or 69 per cent were *S. choleraesuis*, var. *kunzendorf*. The remaining 60 isolations consisted of a grouping of 14 Salmonella species.

The "H" antigen agglutination titers of 110 swine blood serum samples did not indicate that any of the corresponding animals were suffering or had suffered from active infection with *Salmonella choleraesuis*, var. *kunzendorf*, *Salmonella bredeney*, or *S. typhimurium*. Most of these pigs were submitted for autopsy and approximately one third of them showed gross lesions of the lower digestive tract.

RODRIGUES, C. (1945.) Estudos sôbre a "manqueira". [I.] Do preparo e controle da vacina formolada. [II.] Do valor antigenico de tres tipos de vacina. [III.] Da conservabilidade de vacinas. [IV.] Determinação da potencia antigenica de vacinas contra "Clostridium chauvoei". [V.] Da eficiencia vacinante relativa de corpos bacterianos lavados e de filtrados livres de germens. [**Studies on blackleg. I. Preparation and control of formolized vaccine.] II. On the antigenic value of three types of vaccine. III. The keeping qualities of vaccines. IV. Determination of the antigenic potency of *Cl. chauvoei* vaccines. V. The relative antigenic potency of washed bacterial cells and germ-free culture filtrates.**]—*Arq. Inst. biol., S. Paulo.* **16.** 217-242, 243–254, 255–264, 265–296 & 297–306. [Absts. from English summaries.] **771**

I. The composition of the substrate employed for the preparation of a formol vaccine against blackleg was found to be unimportant provided that it allowed luxuriant and quick growth of *Cl. chauveoi*. The addition to the substrate of ammonium biphosphate, potassium bicarbonate, ferric citrate and potassium citrate enhances the value of the growth for the preparation of vaccine. Prolonged incubation at 37°C. is injurious to *Cl. chauveoi* antigens: the shortest possible incubation is therefore advisable. The culture generally attains its maximum concentration in 48 hours. Formalin (0·8%) kills the cultures after 24 hours at 37°C.

Highly pathogenic strains with virulence recently increased by passage through g. pigs, are necessary for obtaining potent antigens.

II. R. investigated the relative values of formolized whole culture vaccine, attenuated vaccine and formolized or non-formolized germ-free culture filtrate vaccine.

Groups of 20 g. pigs were inoculated with the same volume of each of these vaccines and their sensitivity against a highly virulent culture of *Cl. chauvoei* was tested. The formolized whole culture and the attenuated vaccine, in single doses of 1 ml., induced in the g. pigs an equally high immunity against infection by *Cl. chauvoei*. One of two formolized culture filtrates provided an immunity almost comparable to that obtained by the use of bacterial vaccines. Another culture filtrate proved inactive.

III. The effects of prolonged tropical temperatures and age on the formolized whole culture and the attenuated culture were studied.

Four samples of the attenuated culture were kept respectively as follows:– 13 months at 4°C.; 11 months at 4°C. and two months at 27°C.; nine months at 4°C. and four months at 27°C.; seven months at 4°C. and six months at 27°C. Four samples of the formolized whole culture were kept:– ten months at 4°C.; eight months at 4°C. and two months at 27°C.; six months

at 4°C. and four months at 27°C.; four months at 4°C. and six months at 27°C.

The antigenic activity of each of the eight samples was tested by the inoculation of 1 ml. amounts into each g. pig of groups of 20, test inoculations with 1 M.L.D. of *Cl. chauvoei* being given later. Neither of the vaccines tested had lost any antigenic activity.

In a second series of experiments the formolized whole culture was apparently unimpaired by storage at 4°C. for 15 months and at 27°C. for three months. After storage at 4°C. for 18 months there was a considerable loss in the activity of the attenuated vaccine, although it remained viable. When samples from the same stock were kept at 27°C. for eight months and then at 4°C. for seven months, there was loss of viability and activity.

IV. Statistical evidence led to the choice, as standard for the immunity tests, of a dose of culture resulting in about 80% mortality in groups of 20 g. pigs. Percentage mortality is normally distributed in regard to the logarithm of the volume of culture.

Experimental evidence suggested that determinations of the standard could be made on groups containing as few as ten g. pigs. Antigen doses differing in the ratio 1·0 : 2·5 induced distinguishable and proportionate effects.

V. Since HENDERSON (1932–33) demonstrated the importance of the somatic heat-stable antigen of *Cl. chauvoei* in the production of immunity to blackleg, doubts have been raised about the specificity of this antigen in the establishment of immunity to the infection because of the admitted "agressive" action of *Cl. chauvoei* filtrates and the pronounced decrease in activity which bacterial cells undergo when liberated from the substances dissolved in the substratum by successive washings.

Using the principles described in III, the quantitative relationship of the antigenic activity of formolized whole culture, washed cells and supernatant fluid was investigated.

It was found that a high level of protection was conferred on g. pigs by the inoculation of washed cells of recently formolized culture, that the supernatant fluid of the centrifuged culture passed through a Seitz filter possesses some, though very weak, antigenic activity, and that the antigenic activity of formolized whole culture is of a much higher level than that of washed bacterial cells. Efficiency was nearly the same when the three preparations were used in the following proportions:– 1 vol. whole culture, 3 vol. washed cells, 9 vol. supernatant fluid.

As a consequence of the experiments, it seems probable that the supernatant fluid of formolized whole cultures contains, besides some dissolved "O" antigen, a factor which amplifies the immunizing effect of washed cells. The somatic antigen, proved efficient for protection against blackleg, may be non-specific.

GUILLAIMIE, M. (1943.) Préparation et propriétés des sérums antioedematiens. **[Preparation and properties of *Cl. oedematiens* antiserum.]**—*Ann. Inst. Pasteur.* **69.** 146–157. **772**

G. emphasized the value of mixing precipitated toxin with lanolin and olive oil and also of adding tapioca. The antitoxin titre of hyperimmunized horses persisted at a high level for 4–8 months, occasionally for 10–12 months, and very rarely, for 1½–2 years. Following these periods there was a more or less sudden lowering of the titre: the antitoxin level of horses bled twice monthly varied between 100 and 300 units per ml. and persisted for a variable length of time.

The antitoxin strength of *Cl. oedematiens* antisera stored at room temperature frequently diminished by 35–50% in 30 months.

Cl. oedematiens toxin precipitated by ammonium sulphate, liquefied gelatin but did not exert such a generalized strongly proteolytic effect as the normal toxin. The antisera inhibited this effect.

Standardization of sera was not possible by this method, as the quantity of serum required to neutralize the gelatinolytic effect of a given quantity of toxin did not follow the law of multiple proportions.

If used in large quantities, antisera for *Cl. welchii*, *Cl. histolyticum* and *Cl. sporogenes* will sometimes suppress the gelatinolytic effect of *Cl. oedematiens* toxin, but only the *Cl. oedematiens* antiserum will inhibit this effect in small doses.

No parallel exists between the antitoxic and the anti-proteolytic values of different batches of *Cl. oedematiens* sera.—R. F. G. SANDERCOCK.

RODRIGUES, C., & GUIDA, V. O. (1945.) Toxinogenese tetanica em culturas associadas. **[Tetanus toxin production in mixed cultures.]**—*Arq. Inst. biol., S. Paulo.* **16.** 193–216. [Abst. from English summary.] **773**

The authors found that certain contaminated tetanus cultures, in which important contaminants were sarcinae, had a high concentration of tetanus toxin, and they were led to believe that certain contaminants favoured the production of the toxin. They tested the effect of *Cl. tetani* growth in mixed cultures, using organisms of the following genera: *Bacillus*, *Micrococcus*, *Sarcina*, *Proteus*, *Escherichia*, *Serratia*, *Flavobacterium* and *Clostridium*, but found that in no case was there a favourable influence on toxin production.

A special study was made of the effect of

Cl. sporogenes on toxin production by *Cl. tetani*: it was found that the production of the toxin was delayed, but that there was no destruction of toxin developed.

MOORE, M., RUSSELL, W. O., & SACHS, E. (1946.) **Chronic leptomeningitis and ependymitis caused by ustilago, probably U. zeae (corn smut). Ustilagomycosis, the second reported instance of human infection.**—*Amer. J. Path.* **22.** 761–777. **774**

This is the case report of a farmer who developed symptoms suggestive of a cerebellar tumour. Craniotomy was performed, but no tumour was found. Later, symptoms developed which the authors considered similar to those of "mad staggers" in animals. The patient died and on P.M. examination lesions of chronic leptomeningitis and ependymitis were found. In these lesions, a fungus which was believed to be *Ustilago zeae*, a smut fungus of maize, was found. Cultures were not made, the fungus being identified on its morphological characters.

This is claimed to be the second case in which human infection with a fungus pathogenic to plants has been recorded. The veterinary interest in this account lies in the discussion of "mad staggers" in cattle. HARBOUGH & MOHLER (1916) are quoted as stating that "staggers" (grass staggers or stomach staggers) in cattle is caused by an alkaloid contained in maize smut and that animals develop the condition by eating maize attacked by this fungus. The pathologic changes produced in animals by ingestion of the toxic alkaloid of *Ustilago* are said to be meningitis with oedema and congestion of the lungs. [The role of *Ustilago zeae* in the causation of "staggers" in cattle is doubtful and is not generally accepted.] —M. C.

See also absts. **791** (*S. abortus-equi*), **793**, **794** (pleuro-pneumonia of goats), **840** (calf scours and pneumonia), **843** (TB.-like lesions in intestines of fowls), **869** (bacterial and fungous diseases of the skin), **870** (fowl cholera and swine erysipelas), **890** (brucellosis), **909** (mastitis, brucellosis, salmonellosis), **910** (pneumococci), **911** (contagious abortion, pasteurellosis in ducks, *Pfeifferella* infection in ducks), **912** (bovine TB.), **913** (textbook).

DISEASES CAUSED BY PROTOZOAN PARASITES

LUCAS, G. C., & GIL LEON, J. L. (1944.) La enterohepatitis de los pollos. [**Fowl enterohepatitis. Clinical symptoms and histopathology.**]—*Bol. tec. Direcc. gen. Ganad., B. Aires.* No. 11. pp. 811–825. **775**

The authors describe a disease which gives rise to clinical symptoms in chicks at about the sixth day of life and which is lethal in 1–3 days. The disease appears to be due to a species of *Entamoeba*, which provokes ulceration of the small intestine, spreading by way of the portal vein to the liver. The interference with the hepatic blood supply following endophlebitis of the portal vessels results in necrobiosis of circumscribed areas of the liver.

The P.M. features of the disease comprise grossly enlarged liver with yellowish areas of necrosis, enlarged gall bladder, and marked inflammation and petechiation of the small and large intestines. The caeca contain mucoid faeces and small quantities of blood.—I. W. JENNINGS.

LAUNOY, L. (1946.) Albuminurie de la trypanosomose expérimentale a *T. evansi* du lapin. [**Albuminuria in experimental** *Trypanosoma evansi* **infection in the rabbit.**]—*Bull. Soc. Path. exot.* **39.** 159–160. **776**

From observations on five rabbits experimentally infected with *T. evansi*, it is concluded that albuminuria is a constant symptom. As the same applies in *T. annamense* infection, it seems that this is a characteristic of trypanosomes of the *T. evansi* group.—U. F. RICHARDSON.

PRAT, J. (1944.) Sur un cas autochtone de leishmaniose canine. [**A case of autochthonous leishmaniasis in a dog.**]—*Rev. Méd. vét., Lyon et Toulouse.* **95.** 16–25. **777**

A case of canine leishmaniasis is recorded from Allier in the centre of France, the animal having been born in the area and never having left it. The case was characterized clinically by furfuraceous dermatitis of the ears and around the eyes, with ulceration of the edges of the ears. Attention is drawn to the importance of this case as indicating an infection of the *Phlebotomus* of central France with *Leishmania*. The relationship of the leishmanial infections of man and dog is discussed at great length.—U. F. RICHARDSON.

DE GIER, C. J. (1940.) Het cultiveeren van Trichomoniasis foeti. [**The cultivation of** *Trichomonas foetus*.]—*Tijdschr. Diergeneesk.* **67.** 902–907 & 908. [English, French and German summaries.] **778**

A medium containing 100 ml. physiological saline, 10–12 drops of bovine serum, a little ground rice and 0·2 ml. of a solution of potassium phosphates [8·7 g. primary (KH_2PO_4) and 165 g. secondary (K_2HPO_4) in 1,000 ml.] water was preferable to one containing more protein Allantoic fluid was a valuable medium, but scrapings from placental cotyledons in physiological saline were useless.—S. M. G.

HOFMEYR, C. F. B. (1945.) **Globidiosis in cattle.** —*J. S. Afr. vet. med. Ass.* **16.** 102–109. **779**

Globidiosis, a chronic protozoal disease manifested mainly by a pronounced sclerosis of the skin associated with seborrhoea sicca, is

recorded from certain bushveld areas in the Transvaal. Farmers claim that the disease was introduced from the north. It is known locally as *dikvelsiekte* [thick-skin disease] and *olifantvelsiekte* [elephant-skin disease]. The causal organism has been identified tentatively as *Globidium besnoiti*. The disease shows a marked seasonal variation in occurrence and intensity, being most prevalent during the hottest and wettest months of the year. Both indigenous and exotic breeds of cattle are susceptible and animals of all ages are affected. The symptoms are described at the febrile stage, the depilatory stage and the seborrhoea sicca stage.

As regards transmission, the theory is advanced that sporozoites liberated from the cysts in the nasal mucosa contaminate the drinking water. The disease is most prevalent on well-developed ranches where animals do not depend for watering solely on running streams, but are watered from dams or more especially from concrete drinking troughs supplied by pipes from reservoirs filled from boreholes or wells. The mortality observed varied from 1 % on some farms to 20 % on others. No specific treatment is known but it is suggested that arsenical and antimony compounds be tried.

H. considers that the disease constitutes a serious economic threat to the cattle industry in the bushveld areas and appeals for co-ordinated investigations. He suggests that this skin disease should be proclaimed a scheduled disease so that measures for its control and eradication could be set up.

[Globidiosis of the skin, nasal mucosa and subcutaneous and intermuscular connective tissue has been observed in cattle in various parts of N. Rhodesia and in cattle imported from Bechuanaland Protectorate and the Caprivi strip, South-West Africa and also in Southern Tanganyika. It is thus probably widespread in Africa. The lesions observed in the affected animals in the past have been less extensive and severe than those now described and illustrated.]—P. L. LeR.

Spindler, L. A., Zimmerman, H. E., Jr., & Jacquette, D. S. (1946.) **Transmission of *Sarcocystis* to swine.**—*Proc. helminth. Soc. Wash.* **13.** 1–11. **780**

Sarcocystis is a common parasite in the flesh of animals used for food. Little certain knowledge exists of its mode of transmission, and the present investigators set out to determine whether *Sarcocystis* infections could be obtained in swine and other animals by feeding the flesh of infected pigs and also whether the faeces and urine eliminated by these animals after they had consumed infected flesh could transmit the infection. It was found that pigs, dogs, cats, rats, mice and chickens, after consuming infected swine flesh, were capable of transmitting a stage of *Sarcocystis* through their faeces, urine, or both, which was infective to swine. Infection was accomplished by feeding faeces and urine eliminated 15 days after infected flesh had been eaten. Pigs receiving infected meat did not become infected unless they consumed their own faeces and urine. After eating heavily infected flesh, pigs exhibited symptoms which included vomiting, diarrhoea, inappetence, weakness of the loins and temporary posterior paralysis. Symptoms following ingestion of faeces and urine eliminated by animals after consumption of infected flesh were unthriftiness, weakness of the loins, and temporary posterior paralysis. Usually, infections of 40 or more sarcosporidia per gramme of diaphragm tissue were associated with unthriftiness and stiffness of the muscles. The heaviest infections occurred in those animals that consumed the greatest amounts of urine along with the faeces. Lesions at autopsy of infected animals were enlargement of the kidneys and hyperaemia of the mucosa of the stomach and intestines.—C. Horton Smith.

Mahamooth, T. M. Z. (1945.) **Diseases of cattle transmitted by ticks.**—*Trop. Agriculturist.* **101.** 223–226. **781**

A popular account is given of the diseases due to *Babesia bigemina*, *Theileria mutans* and *Anaplasma* as they occur in cattle in Ceylon. In the low country the diseases are enzootic, occurring in calves whose growth may be stunted, but which usually recover. Serious disease occurs only in cattle brought down from the hills, or in imported animals.

Brief accounts are given of the clinical symptoms, methods of tick control and methods of treatment. Trypanblue, acriflavine and acaprin are recommended against *B. bigemina*, and N.A.B. [novarsinobillon] is said to be useful against *Theileria* and *Anaplasma*; although not specific. [The article contains minor inaccuracies, *e.g.*, that theileria cause anaemia and that the incubation period of anaplasma is 13–14 days, although it is known that it may be extended to 100 days.]

—U. F. Richardson.

Nobrega, P., & Reis, A. S. (1945.) Sôbre o tempo de aparecimento e duração da imunidade nos embriões e pintos de galinhas vacinados contra a espiroquetose. **[On the immunity of chicks and chick embryos from hens vaccinated against fowl spirochaetosis.]**—*Arq. Inst. biol. S. Paulo.* **16.** 111–114. [Abst. from English summary.] **782**

Immunity against fowl spirochaetosis can be detected in the embryos of eggs laid by hens vaccinated two weeks previously. 80 % of chicks

hatched from eggs laid during the first week after vaccination were sensitive to the inoculation of *S. gallinarum*; on the other hand, 80% of the chicks hatched from eggs laid 10–16 days after vaccination were resistant to infection.

Chicks hatched from vaccinated hens were immune to the disease during the first two weeks of age, after which immunity decreased, disappearing completely by the time they were 20 days old.

See also absts. **843** (trichomoniasis in fowls), **871**, **872** (trypanosomiasis), **873** (toxoplasma), **874**, **875** (plasmodia), **876** (equine piroplasmosis) **877** (avian spirochaetosis), **904** (*Trichomonas* staining).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

De Blieck, L., & Jansen, J. (1942.) Enting tegen mond- en klauwzeer met crystal-violet-vaccin alsmede met bij 37° C. gedood virus bij de cavia. [**G. pig inoculation against foot and mouth disease with crystal-violet vaccine.**]—*Tijdschr. Diergeneesk.* **69.** 47–55 & 56. [English, French and German summaries.] [Abst. from English Summary.] **783**

G. pigs given one subcutaneous inoculation of crystal violet F. & M. vaccine had no ill-effects and after three days developed a humoral immunity which lasted at least 52 days.

The best vaccine is obtained from epithelial tissue containing the virus: it is important to preserve the virus in an incubator at 37°C.

Fogedby, E. (1940.) Mund- og Klovesygekulturvirus og dets Anvendelse som Viruskilde i Aluminiumhydroksydvaccinen. [**Foot and mouth disease culture virus and its use in production of aluminium hydroxide vaccine.**]—*Maanedsskr. Dyrlaeger.* **52.** 71–76. **784**

Epithelium (1 g.) from calf foetuses 30–40 cm. in length was mixed with 1·5 ml. of virus suspension, 10 ml. of Tyrode's fluid and 1 ml. bicarbonate buffer. After incubation at 37°C. for 40 hours the cultures had generally gained a titre between 1 : 1,000 and 1 : 10,000. Only in exceptional cases was a titre of 1 : 100,000 obtained. By using virulent O-virus from the cultures, adsorbates with aluminium hydroxide were prepared and attenuated by treatment with formol and heat in the usual manner. Seven cows were injected subcutaneously twice, with a fortnight's interval, with 20 ml. of the vaccine. When control infection was made 16 days later it was evident that the animals had acquired a high degree of immunity. The experiments are regarded as preliminary.—H. C. Bendixen.

Hoyt, H. H. (1946.) **Aujeszky's disease in Wisconsin.**—*J. Amer. vet. med. Ass.* **108.** 422–424. **785**

This is a report of a fatal condition in a herd of 33 beef cattle in Wisconsin in 1945, in which the affected animals had clinical signs of Aujeszky's disease. It is considered significant that the cattle were pastured together with swine. Within the first two days 12 cattle were affected and the remainder were then slaughtered. A suspension of brain tissue from one of the affected cattle produced pruritus and death when injected subcutaneously into a calf. The same suspension was used to start a series of rabbit passages by intracranial injection. Death was produced in the rabbits in about 60 hours. Some difficulty was experienced in obtaining an infective filtrate, but by using a broth suspension the infective agent eventually passed through a Berkefeld N candle.—W. M. Henderson.

Collier. (1944.) Weitere Beiträge zur klinischen Feststellung der Tollwut. [**Observations on the clinical diagnosis of rabies in animals.**]—*Berl. Münch. tierärztl. Wschr./Wien. tierärztl. Mschr.* January 7th. 7–9. **786**

C. discusses the difficulty of diagnosing rabies in the early stages and gives a detailed description of the clinical signs of the disease as observed in a dog and in a cow. Before the characteristic signs of the disease appear, diagnosis must be based on a careful consideration of the history of the case and the results of the examination of the patient, any suggestion of paralysis or abnormal posture being suspicious.—W. M. Henderson.

—. (1946.) **Rabies and its control.**—*J. Amer. vet. med. Ass.* **108.** 293–302. **787**

This report, prepared by a special subcommittee of the U.S. National Research Council's Committee on Animal Health, consists of a review of the known facts about the disease, supplemented with statistics of its occurrence in the U.S.A. and recommendations for its control. There is no evidence to suggest that rabies existed in North America prior to colonization, but the disease is now enzootic throughout most of the U.S.A. It occurs chiefly in dogs, but epizootics have also occurred in foxes, skunks and coyotes. Although there are relatively few cases in man, the disease constitutes a major public health problem, about 30,000 people a year receiving vaccine treatment.

The increase in the incidence of the disease is attributed to lack of a uniform control policy and to the lack of any plan for concerted action. At present, control work is conducted on a municipal or a county basis, whereas the problem is essentially a Federal one.

The subcommittee recommends that co-

ordination and supervision of national control should be the responsibility of the Bureau of Animal Industry, U.S. Department of Agriculture, and should be based on a system of disease notification, taxation and licensing of dogs, use of vaccine and imposition of quarantine in connexion with local outbreaks. Any outbreaks in wild animals should be dealt with in co-operation with the U.S. Fish and Wildlife Service and the state Wildlife Departments.—W. M. HENDERSON.

*CLEMENTE, P. (1943.) Tratamiento antirrábico. Método de Högyes. Sus fundamentos y sus ventajas. Resultados obtenidos. Nuestra estadistica. [**Antirabies treatment. Högyes' method, its principles and advantages. Results obtained. Statistics (Spain).**]—*Rev. Sanid. Hig. publ., Madr.* **17.** 311–328. [Abst. from abst. in *Zbl. Bakt. I. (Ref.).* **144.** 511–512.] **788**

Untreated nervous tissues suspended in normal saline for varying periods of time were used in dilutions of 1 : 100 in the treatment of rabies, doses varying according to the duration of suspension. Mortality was 0·11 %.—J. ZWEIG.

GALLIA, F. (1946.) **Immunological differences between the Pasteur fixed-virus strains and the Venezuelan paralytic rabies strains.**—*Canad. J. comp. Med.* **10.** 223–236. [French summary.] **789**

The Pasteur vaccine conferred satisfactory protection of mice against homologous Pasteur virus and two Venezuelan strains of canine origin, but gave no protection against three paralytic rabies viruses of bovine origin. On the other hand, mice vaccinated with Bolivar vaccine were resistant to the three paralytic viruses, but only moderately so to the Pasteur virus. Serum neutralization tests were not conclusive; there was an impression of some immunological relationship between the Pasteur virus and the paralytic viruses. Brain tissue neutralization tests failed to show relationship between the two groups of viruses. Complement-fixing antibodies failed to demonstrate immunological difference between the Pasteur virus and two paralytic viruses and bore no relation to the intracerebral cross-resistance and brain tissue neutralization tests. G. believes that there are two immunologically unrelated, or at least only distantly related, rabies viruses in Venezuela: one of dogs and occasionally human beings the other confined to the bovine and equine species and transmitted by bats.—P. J. G. PLUMMER.

CARNEIRO, V. (1945.) Duração da imunidade na encefalomielite infecciosa do cavalo. [**Duration of immunity in equine encephalomyelitis.**]—*Arq. Inst. biol., S. Paulo.* **16.** 353–360. [Abst. from English Summary.] **790**

Experiments with g. pigs on the duration of immunity to E.E. revealed that the immunity yielded by two doses of vaccine given subcutaneously and one intracerebral inoculation of virus remains after ten months, as tested with 1,000 M.L.D. given intracerebrally.

It is yet to be established whether immunity produced by the simultaneous administration of vaccine (subcutaneously) and active virus (cerebrally) is more solid and durable than that yielded by peripheral vaccinations only.

HENNING, M. W. (1946.) **On the etiology of epizootic or infectious equine abortion.**—*Onderstepoort J. vet. Sci.* **21.** 17–40. **791**

Two outbreaks of equine infectious abortion are described in which *Salmonella abortus-equi* was isolated from the organs of the aborted foetuses. This organism, however, could not be recovered from the remaining foetuses or from their dams' after-birth. A series of transmission experiments is described in which pregnant horse and donkey mares were used. Abortion was produced in all of four mares by the oral administration of minced *S. abortus-equi*-infected foetal organs, in seven of 13 mares by the intravenous inoculation of 0·81μ A.P.D. collodion membrane or Berkefeld candle filtrates of these organs, and in one of two mares by the oral administration of minced foetal organs that were culturally free from *S. abortus-equi*. In addition, two of 13 mares inoculated intravenously with the filtrate produced live foals that died within 48 hours of birth. All the aborted foetuses and the two dead foals from these experiments had lesions typical of equine infectious abortion and *S. abortus-equi* was isolated from 11 out of the 14 foetuses or dead foals. The mares all gave negative agglutination reactions at the time of abortion or parturition, but in cases where *S. abortus-equi* was recovered from the foetus the reaction became positive in about two weeks. When the organs of the foetus were free from the organism or when a live foal was born the aggln. reaction of the mare generally remained negative. The apparently infective nature of the filtrates used in these experiments confirms the suggestions made by earlier workers that a filtrable virus can be incriminated as the cause of abortion, in spite of the frequent occurrence of *S. abortus-equi* in the foetus or the after-birth. [See *V. B.* **7.** 318; **8.** 716; **9.** 568; **12.** 150 and **13.** 283.]

H. is of the opinion that the true cause of equine infectious abortion is a filtrable virus and that *S. abortus-equi* either occurs as a saprophyte invading the tissues when resistance is lowered and thus causing secondary infection, or it may have some synergistic action. In view of this conception, which differs from the original view

that a salmonella is the causal agent of equine infectious abortion, H. suggests the advisability of further investigating the aetiological significance of salmonella in calf paratyphoid and fowl typhoid. —W. M. HENDERSON.

OLAFSON, P., MACCALLUM, A. D., & FOX, F. H. (1946.) **An apparently new transmissible disease of cattle.**—*Cornell Vet.* **36.** 205–213. **792**

An acute, infectious, contagious disease of cattle is described, in which the most severely affected animals have a high temperature, scour profusely, are depressed, have complete loss of appetite, salivate and develop ulcers in the mouth, nose and on the muzzle. In six herds, 33–88% were affected, with a mortality of 4–8%. Pregnant animals usually aborted. The disease is described as explosive in character: in five herds, all animals affected developed the disease within a period of 2–3 days, so that it was first thought that poisoned grain was responsible. Examination P.M. revealed that ulceration was also present in the pharynx, larynx and oesophagus and sometimes in the caecum. The intestinal mucosa was diffusely reddened and haemorrhages were sometimes present in the leaves of the omasum, the abomasum, the caecum, the subcutaneous tissue, the epicardium and the vaginal mucosa.

The disease was transmitted experimentally by drenching cattle with faecal material or by inoculating them subcutaneously with blood or splenic emulsion from animals at the stage when the temperature reaction was at its peak. The incubation period was 7–9 days. No bacteria could be isolated by aerobic culture of the blood or splenic emulsion used in these experiments. Material regularly infective for calves failed to produce any apparent reaction in mice, rabbits, g. pigs and sheep, nor did it kill ten-day chick embryos. The authors consider that the condition they describe is a new transmissible disease of cattle.

[The account of the disease is most interesting and it is clear that until further work is done it will not be possible to identify it with certainty. Some of its features bear a close resemblance to those of rinderpest. The dissimilar features of a condition in a new locality from the classical picture of a recognized disease is no guarantee of separate identity.

In this connexion it is worthy of note that in the recent outbreaks of Newcastle disease in the U.S.A. there were features quite different from the classical features of the disease in other countries.]—W. M. HENDERSON.

I. AYGÜN, S. T. (1937–1941.) Anadolu keçilerinin salgin ciger agrisi ve savaş yollarï üzerinde araştirmalar. **[Contagious pleuro-pneumonia in Anatolian goats and its control.]**—*T. C. yük. Zir. Enst., Ankara.* No. 57. pp. 55 + 67 + 16. [In Turkish and German.] **793**

II. AYGÜN, S. T., & AYGÜN, K. S. (1942.) Experimentelle und pathologisch-anatomische Studien über Pleuro-Pneumonia contagiosa Caprae in Anatolien und ihre Beziehungen zur menschlichen Grippe. **[Contagious pleuro-pneumonia of goats in Anatolia and its relationship to human influenza.]**—*Schweiz. Z. Path. Bakt.* **5.** 216–225. [See also AYGÜN—*V. B.* **17.** 11.] **794**

I. & II. The authors describe a contagious lung disease of goats widespread in Anatolia. The course of the disease, the pathological condition, its infectivity and epidemiology as well as its possible aetiology have been extensively studied. It is assumed that the disease is caused by a filtrable virus associated with a small bacillus of the *Haemophilus* group. The name "goat influenza" is proposed as more appropriate than pleuro-pneumonia of goats, not only because the lesions are similar to those of human influenza, but also because there is a true goat pleuro-pneumonia caused by a pleuro-pneumonia-like organism and widespread in India.—E. K.-N.

MANNINGER, R. (1944.) Über die Ätiologie der ansteckenden Magendarmentzündung des Schweines. **[Aetiology of infectious gastro-enteritis in pigs.]**—*Dtsch. tierärztl. Wschr./Tierärztl. Rdsch.* **52/50.** 137–139. **795**

M. describes an infectious disease of pigs which may cause a rise in temperature for a few days and then clear up, or in which the fever may be followed by an inflammation of the stomach and intestine as well as diarrhoea. M. was able to transfer the condition by using blood withdrawn during the early phase of the disease. He points out that the agent of this infectious gastro-enteritis, which he calls a virus, is similar to the agent causing death by acute fatal syncope in pigs. [See also KÖBE—*V. B.* **14.** 201.]—E. K. N.

BEAUDETTE, F. R. (1946.) **Newcastle disease in poultry.**—*Cornell Vet.* **36.** 105–117. **796**

A review is given of Newcastle disease as it occurs in the U.S.A., with a detailed account of the symptoms, the P.M. findings and the methods used in laboratory diagnosis, and a discussion on control measures that might be adopted. B. emphasizes the low mortality of the disease, as encountered in the U.S.A. at present; although mortality may be 20–60% in young chicks, it is described as not nearly so high in adults, the most pronounced feature being a sudden drop in egg production.—W. M. HENDERSON.

BRANDLY, C. A., MOSES, H. E., JUNGHERR, E. L., JONES, E. E., & TYZZER, E. E. (1946.) **New-**

castle disease and fowl plague investigations in the war research program.—*J. Amer. vet. med. Ass.* **108.** 369–371. **797**

This is a brief summary of work done at Harvard Medical School by a research team organized by the U.S. War Research Service of the Federal Security Agency: a full report is to be given later. The principal results were the identification for the first time in the Western Hemisphere of the virus of Newcastle disease in 1944 [see BEACH—*V. B.* **16.** 393]; determination of the pH infectivity-stability curve of Newcastle disease virus and the use of this, with comparison of the curve for fowl plague virus, as an aid in differentiation; demonstration of Newcastle disease antibodies in the yolks of eggs laid by Newcastle disease immune hens and of the transfer of the antibodies to the chick, in which they persist for the first month to a sufficient degree to protect the chick against infection with the specific virus; the use of penicillin for the direct isolation in developing eggs of Newcastle disease virus or fowl plague virus from contaminated material, and demonstration that the Newcastle disease virus killed mice when injected intracranially.
—W. M. HENDERSON.

BEACH, J. R. (1946.) **The status of avian pneumo-encephalitis and Newcastle disease in the United States.**—*J. Amer. vet. med. Ass.* **108.** 372–376. **798**

In 1940, numerous poultry flocks in California were affected with a respiratory-nervous disorder later termed avian pneumo-encephalitis. In 1942, the cause of this condition was identified as a filter-passing virus distinct from the viruses of infectious laryngotracheitis and infectious bronchitis [see *V. B.* **12.** 537]. The virus was also identified with a previously unclassified type of respiratory infection that had been prevalent in California since 1935. The mortality from avian pneumo-encephalitis in field outbreaks has been small, but the virulence of the virus can be greatly enhanced experimentally by serial passage in chick embryos or in chickens. In 1944, it was found that the virus could be neutralized by Newcastle disease immune serum obtained from England [see *V. B.* **16.** 393]. In 1945, a disease occurring in poultry flocks in New Jersey, New York, Massachusetts and Connecticut was diagnosed as Newcastle disease, but the condition appears to have been the same as that called avian pneumo-encephalitis in California. In both cases the clinical aspects of the disease differ widely from those of Newcastle disease as described in other countries, the principal differences being the low mortality and the difficulty of artificial transmission of the American disease. [Independent investigators report that the virus isolated from these outbreaks is identical with Newcastle disease virus—see absts. preceding.]
—W. M. HENDERSON.

SPALATIN, J. (1943.) Ueber Vorkommen und Herkunft der Bakteriophagen bei Hühnern. [**The origin of bacteriophage in fowls.**]—*Zbl. Bakt. I. (Orig.).* **151.** 25–30. **799**

Using ten strains of *Salmonella gallinarum* and five strains of *Bact. coli*, S. studied the corresponding bacteriophage content of hens' eggs, chick embryos, chicks' and hens' faeces and portions of the alimentary canal of the hen. No phage could be demonstrated in the eggs or in the embryos of eggs laid by fowls excreting phage in the faeces. Bacteriophage was found in the faeces of chicks 2–4 days after hatching. No difference could be established in the incidence of phage excretion in the faeces of a group of presumably healthy fowls and a group whose sera showed positive *S. gallinarum* titres up to 10^{-4}. When phage was isolated from the faeces it could usually be found in the gizzard, the small intestine, the caeca and the colon. Contrary to the findings of OHASHI [see *V. B.* **12.** 379], no difficulty was experienced in isolating phage from the faeces of fowls in winter.—W. M. HENDERSON.

PRAT, J. (1943.) Existence dans le centre de la France de Rickettsia conjonctivae bovis, agent d'une conjonctivite contagieuse des bovidés. [*Rickettsia conjunctivae bovis* (**the cause of a contagious conjunctivitis in cattle**) **in central France.**]—*Rev. Méd. vét., Lyon et Toulouse.* **94.** 65–71. **800**

P. records the detection of the plaques and elementary bodies of a rickettsia in smears from cases of bovine infectious conjunctivitis in the Allier department of France. Infection was usually benign and might have been overlooked except that occasional cases of keratitis and ulceration of the cornea occurred.—U. F. RICHARDSON.

ANON. (1946.) **A laboratory outbreak of Q fever caused by the Balkan grippe strain of** *Rickettsia burneti.*—*Amer. J. Hyg.* **44.** 123–157. [Author's summary copied *verbatim.*] **801**

A laboratory outbreak of Q fever is described. The causative agent was the Balkan grippe strain of *Rickettsia burneti* and the principal source of the infection was believed to be infected egg embryos. The evidence suggested that the infection was spread by means of air-borne droplets or droplet-nuclei.

A total of 16 patients developed Q fever. The disease usually began acutely, was characterized by constitutional symptoms, especially headache, with few respiratory symptoms. Pleuritic pain was also observed. Fourteen patients exhibited roentgenographic evidence and physical

signs of pneumonia. Following a febrile period of 7 to 10 days, symptomatic recovery was rapid. In 4 patients, however, a relapse of the infection occurred.

Agglutinins to the Balkan grippe strain of *R. burneti* were demonstrated in the convalescent serum obtained from each patient, and in addition, the agent was identified in blood specimens collected during the acute illness in 4 cases, and in the pleural fluid in one patient.

ROBBINS, F. C., GAULD, R. L., & WARNER, F. B. (1946.) **Q fever in the Mediterranean area: report of its occurrence in allied troops. II. Epidemiology.**—*Amer. J. Hyg.* **44.** 23–50. **802**

ROBBINS, F. C., & RUSTIGIAN, R. (1946.) **Q fever in the Mediterranean area: report of its occurrence in allied troops. IV. A laboratory outbreak.**—*Ibid.* 64–71. [Authors' summary copied *verbatim.*] **803**

II. The following remarks concern the relationship of animals to the disease in human beings.

"The majority of the epidemics was found to be associated with animal life, such as pigeons, rats, mice, and cattle, and there is a distinct possibility that some of these, or other lower animals not noted in the investigations, may serve as reservoirs of the infection. The association with dust, either accumulated in attics or on hay and straw, is quite striking. Such dust could be infected by contamination from excrement of any of the animals noted above or from their insect parasites. The Australian workers have reported [*V. B.* **16.** 190] that in that country Q fever is a natural disease of bandicoots and cattle and that it is transmitted among them by ticks. They believe that it is an aberrant infection in man and postulate that the inhalation of dried tick feces present on the hides of cattle is the cause of most human disease in that country. This hypothesis that the disease was transmitted by the inhalation of infected dried feces present in the dust would seem to be a reasonable one and is consistent with the findings of our investigations. The hypothesis, however, requires further testing before it can be accepted."

IV. An outbreak of 20 cases of proven Q fever among the personnel of the 15th Medical General Laboratory in Naples, Italy, is described. The source of infection was traced to the Virus Section where the rickettsia of Mediterranean Q fever was being studied. It was suggested that association with infected chick embryos was more dangerous than with infected guinea pigs. Transmission by means of inhalation of infected dust or particulate matter in the air is postulated. The extreme infectiousness of the agent is emphasized.

See also absts. **740** (influenza virus), **763** (virus gastro-enteritis of pigs), **822**, **823** (neoplasms), **828** (effect on progeny of virus infection of the dam), **840** (calf scours), **909** (equine encephalomyelitis, fowl pox), **911** (rabies).

IMMUNITY

DELAGE, B. (1944.) Sur le role que jouent les lipides dans certaines activités biologiques des serums. **[The role of lipoids in sera.]**—*Arch. Inst. Pasteur Maroc.* **3.** 1–19. **804**

Studies were made to determine the parts played by lipoid bodies in antibody reactions, techniques being described for the removal of lipoids from sera without affecting the physical condition of the proteins. Various serological reactions were investigated to determine whether antibodies were entirely protein in nature or lipoproteins, but results were not uniform and depended on the particular serological activity under investigation.

Diphtheria antiserum maintained its antitoxic titre when the lipoids were either totally or partially removed and subsequent investigations gave similar results for tetanus antisera. In these cases the antitoxic properties lay solely in the protein fraction, the lipoids playing no part and having no immunizing value. Removal of lipoids did not affect the power of the complement fixing serum globulin fraction but almost completely destroyed that of the albumen fraction. Haemolytic power was not affected by either partial or total removal of lipoids. Studies were made on a single haemolytic reaction and two flocculation reactions for syphilis. With 25 positive sera, negative reactions were encountered after partial or total lipoid removal. Partial or total removal of lipoids suppressed the precipitating powers of sera. The agglutinating properties of antisera to *Pseudomonas aeruginosa*, *Ps. fluorescens* and *Pfeifferella whitmori* remained unchanged after removal of lipoids. Similar findings were obtained with sera from typhus patients.

The following general conclusions were also reached. The results of other workers agree with the present studies in that lipoids play no part in antitoxic and haemolytic activity of sera. A certain number of conclusions can be drawn on the role of lipoids in immunity:–

1. Removal of lipoids is a physico-chemical test which allows of the classification of serological properties into (a) those destroyed by the process and therefore of a lipoproteic nature and (b) those unaffected and presumably linked up with the protein fraction of the plasma lipoproteins.

2. Lipoid removal affects the antibody function either completely or not at all.

3. The different antibodies studied constitute well-defined physico-chemical groups.

4. Most serologists regard haemolytic and flocculation reactions in the diagnosis of syphilis as derived from totally different mechanisms; the present studies suggest that these reactions may involve closely similar if not identical substances.

5. The results indicate that the superficial similarities between precipitating and agglutinating properties are more apparent than real.—A. EDEN.

BOIVIN, A., & DELAUNAY, A. (1942.) Les antigènes glucido-lipiques, facteurs favorisant les infections bactériennes. Antigènes glucido-lipiques et "agressines". **[Glycolipoid antigens and agressins.]**—*Rev. Immunol.* **7.** 193–207. **805**

The authors give details of a number of experiments on mice and g. pigs, in which they demonstrated that the virulence of certain organisms was increased if the animals were inoculated previously with a sublethal dose of either *Salmonella typhi-murium* or *Bact. coli* antigen. In mice, the presence of *S. typhi-murium* antigen increased the virulence of smooth strains of both *S. typhi-murium* and *Bact. coli* but no such increase in virulence was observed if the infecting organisms were rough. Similarly, the presence of *Bact. coli* antigen produced a slight increase in the virulence of *S. paratyphi B* and *S. typhi* (Vi). In the case of both mice and g. pigs the virulence of anthrax bacilli was increased in animals which had been inoculated previously with *Bact. coli* antigen. Under similar conditions, however, avirulent strains were unaffected.

From these experimental data, the authors conclude that antigens function in the host as a defensive mechanism for related and sometimes unrelated bacteria. The relationship between the defensive mechanism of antigens and the resistance of the host is discussed.—A. BUXTON.

See also absts. **750**, **751** (TB.), **759** (Johne's disease antigen), **763** (swine erysipelas), **764** (*Br. abortus*), **771** (*Cl. chauvoei*), **772** (*Cl. oedematiens*), **782** (avian spirochaetosis), **783**, **784** (foot and mouth disease).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

FREEMAN, R. B. (1946.) **The pig as a host of *Pulex irritans* L. (Siphonaptera, Pulicidae).**—*Ent. Mon. Mag.* **82.** 19–21. **806**

An infestation of many years' standing is reported on an Oxfordshire pig-farm. Fleas were present in "millions" in the litter, in sheds and in surrounding fields. Bites on human beings were rare in comparison with the numbers present and no disturbance of the pigs was noted.

After three years' evacuation and treatments by an insecticide servicing firm there were still severe outbreaks in associated buildings, and infestation did not die out until the farm had been five years without stock. The fleas must have survived at least three years without a blood meal. —T. SPENCE.

JACKSON, C. H. N. (1945.) **Pairing of *Glossina morsitans* Westwood with *G. swynnertoni* Austen (Diptera).**—*Proc. R. ent. Soc. Lond.* Ser. A. **20.** 106. [Abst. in *Trop. Dis. Bull.* **43.** 420, copied *verbatim.* Signed: P. A. BUXTON.] **807**

It is already known that in cages males of *Glossina morsitans* or *swynnertoni* mate at random with females of either species, and do not select those which are co-specific.

The author has carried out a field experiment to examine the same point. He worked in a spot in which *G. swynnertoni* was abundant and exposed large numbers of pupae of both species in such a way that the adults on emergence were completely free. He caught several hundred pairs and studied the proportion in which the two individuals were of the same or different species. He concludes that even in nature male *G. swynnertoni* mates at random with females of its own species or *morsitans*. The same is probably true of male *G. morsitans* but the numbers were lower and the result not conclusive.

This is remarkable, for it has been shown by VANDERPLANK [1944] that heterogamous matings are barren or nearly so, yet neither species has any mechanism to prevent this occurrence.

JACKSON, C. H. N. (1945.) **Comparative studies of the habitat requirements of tsetse fly species.**—*J. Anim. Ecol.* **14.** 46–51. [Abst. in *Trop. Dis. Bull.* **43.** 312–313, copied *verbatim.* Signed: KENNETH MELLANBY.] **808**

In an attempt to discover why different species of *Glossina* are found in different types of country, *G. morsitans* and *G. palpalis* were introduced into territory where *G. swynnertoni* normally occurs. This was done by allowing pupae, brought from indigenous areas, to hatch in the new habitat.

The *morsitans* were able to produce a second generation in the new environment, but were physically inferior to *morsitans* in a normal habitat, being smaller and containing less reserve fat. It is suggested, however, that this species would die out, not so much for physiological reasons but because the predominant *swynnertoni* males would impregnate the *morsitans* females;

such females are either barren or produce few, mostly sterile, offspring.

G. palpalis did not produce a second generation under the new conditions, although a seasonal stream (containing water at the time of the experiment) was in the vicinity.

Laboratory experiments to elucidate these results are described, and future work is suggested. The ability of each species to colonise a particular type of country appears to be related more to its behaviour (frequency of feeding, choice of resting place) than to its straightforward physiological reactions to climatic conditions.

BAUMAN, V. V. (1946.) Zhiznesposobnost' yaits kleshcheĭ-nakozhnikov pri nizkikh temperaturakh. [**Viability of *Psoroptes* eggs at low temperatures.**]—*Veterinariya, Moscow.* No. 2–3. p. 27. **809**

The effect of exposure to low temperatures (from 0°C. to –23°C.) was tested on the eggs of *Psoroptes equi* var. *ovis*, *P. equi* var. *bovis* and *P. equi*. Twenty-nine experiments involving 290 eggs were made at temperature ranges of 0°C. to –5°C., –5°C. to –10°C., –10°C. to –15°C., –15°C. to –20°C., and –20°C. to –25°C. The relative humidity was 80–95%.

After exposure to these temperature ranges the eggs were placed in a special chamber at a temperature of 28°–34°C.

No hatching occurred in any of the eggs; control eggs hatched normally. The duration of exposure necessary to kill the eggs varied with the temperature from five days at 0°C. to –5°C. to 2–4 hours at –20°C. to –25°C.—O. UVAROV.

DE MELLO MALHEIRO, D., MARTINS, E. O., & DE LACERDA JUNIOR, P. M. G. (1943.) Estudos sobre a sarna demodécica dos cães. (Nota prévia). [**Demodectic mange of dogs. (Preliminary note.)**]—*Rev. Fac. Med. vet. S. Paulo.* **2.** 169–176. [English summary.] **810**

Following work by CANEPA & DA GRANA [*V. B.* **13.** 94] the authors made histological examinations of the tissues of six dogs affected with demodectic mange and demonstrated the parasite in the skin and in the lymph nodes of all six, the submaxillary, prescapular, popliteal and precrural nodes being most commonly affected. In some nodes there was enlargement, with an increase in lymphocytes and polymorphonuclear leucocytes and hyperplasia of the reticular cells. In others, the reaction was superficial, affecting only the capsule, which was invaded with giant cells and resembled a foreign body granuloma: *Demodex* mites were found and in one section there was a giant cell ingesting a parasite.

The enlargement and leucocytosis indicated a reaction against secondary bacterial infection; this, coupled with the frequency of purulent pericarditis and septicaemic or pyaemic conditions as a cause of death, indicated that the secondary invaders were as important as the parasite itself. Treatment should be directed against the parasites in the skin, the parasites in the l.nn., and the bacterial infection.—R. MACGREGOR.

COOPER, K. W. (1946.) **The occurrence of the mite *Cheyletiella parasitivorax* (Mégnin) in North America, with notes on its synonymy and "parasitic" habit.**—*J. Parasit.* **32.** 480–482. [Author's summary copied *verbatim.*] **811**

Records of *Cheyletiella parasitivorax* Mégnin from North American cats and rabbits are listed. *Ewingella americana* Vail and Augustson is reduced to synonymy with *Cheyletiella parasitivorax* Mégnin.

Cheyletiella parasitivorax, as Mégnin (1878) first stated, is most probably a predator of soft-bodied mites parasitizing the mammalian host. There is as yet no conclusive evidence for the reports that *Cheyletiella parasitivorax* Mégnin attacks its mammalian hosts or that it is a cause of mange in rabbits and man.

See also absts. **781** (ticks), **879–884**, **886** (D.D.T.), **905** (glossinae).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

GUILHON, J., & PRIOUZEAU, M. (1945.) La paramphistomose bovine en France. [**Paramphistome infestation of cattle in France.**]—*Rec. Méd. vét.* **121.** 225–237. **812**

Two species of paramphistomes have been observed in France, *Paramphistomum cervi* and *Cotylophoron cotylophorum*. The authors review the records of occurrence of these parasites, describe their life-histories, and discuss their pathogenic effect. Light infestations have little effect, but mass infestation may cause death within a week or may lead to the development of symptoms similar to those of parasitic gastritis. These symptoms result from the damage caused by the migration of the young amphistomes from the duodenum, and recovery usually follows when they reach the rumen. Successive outbreaks of enteritis may occur and the building-up of a large infestation of amphistomes in the rumen leads to a chronic rumenitis characterized by loss of condition, diarrhoea, cessation of rumination and tympany. The authors describe four cases of chronic rumenitis associated with *P. cervi* infestation acquired by adult animals' drinking muddy

and brackish water from ditches during the summer. They suggest that paramphistome infestation may be more serious and more widespread than previously thought.—H. E. H.

CAWSTON, F. G. (1946.) **Schistosomiasis in Southern Africa in its relation to the pollution of river-pools.**—*S. Afr. med. J.* **20.** 240–241. **813**

C. regrets that little attention has been paid to the findings of authoritative surveys of South African freshwater molluscs capable of conveying schistosomes to man and stock. He deprecates the destruction of molluscs not concerned or only occasionally involved in the transmission of schistosomes.—P. L. LEROUX.

I. PELLEGRINI, D. (1942–45.) Cisticercosi del cammello. [**Cysticercosis in the camel.**]—*Racc. Stud. Pat. vet., Somaliland.* No. 1. pp. 42–48. [English summary.] **814**

II. PELLEGRINI, D. (1942–45.) Il " Cysticercus dromedarius " nel bovino. [*Cysticercus dromedarius* **in cattle in Somaliland.**]—*Ibid.* pp. 49–52. [English summary.] **815**

I. Out of 642 camels slaughtered in Merca market, 23% were found to harbour cysticerci. The principal organ affected was the liver, but cysts were also found in the heart, masseter muscles, tongue, cervical muscles and lungs. The parasites were 5–13 mm. in length by 3–8 mm. in breadth. The receptaculum capitis was large and difficult to evaginate. The scolex was armed with a double row of hooks, varying in number from 34–44, the larger hooks measuring 180–220μ and the smaller 105–135μ. The larger hooks had the blade shorter than the handle and a simple large guard.

The cysticercus is compared with *C. cellulosae*, *C. tenuicollis*, *C. bovis* and *C. ovis*, from all of which it shows essential differences. Attempts to infect human beings and dogs with the tapeworm failed. The name *C. dromedarius* is proposed for the parasite, but it is pointed out that it may be identical with *C. cameli* described in camels in Egypt by MASON (1919).

II. A similar cysticercosis was found to occur in cattle slaughtered at Merca, the infection rate being 0·47%. The predilection site in cattle appeared to be the heart, but cysts were also found in the tongue, psoas muscle and brain. The cysticercus in cattle differed from that in camels only in having a yellowish colour, ascribed to the influence of the host. Macroscopically this cyst can be distinguished from *C. bovis* by its larger size and the difficulty in evaginating the scolex, and microscopically by the presence of hooks.

It is pointed out that the presence of this cysticercus in cattle complicates meat inspection, and it is suggested that, although there is no evidence that the tapeworm infests man, the invaded organ should be condemned for human consumption on the grounds of repugnancy.

—U. F. RICHARDSON.

BUGGE, G. (1944.) Über Echinokokken in den Schaflungen und den zugehörigen Lymphknoten. [**Echinococci in the lungs and associated lymph nodes of sheep.**]—*Z. Fleisch- u. Milchhyg.* **54.** 145–147. **816**

During the course of many years' experience of meat inspection, B. encountered many cases of sheep having echinococcal cysts in the lungs. In some 3% of these cases, cysts were also found in the associated lymph nodes. B. discusses these findings in the light of other observations recorded in the literature.—H. E. HARBOUR.

TENHAEFF, C., & FERWERDA, S. (1945.) 25 jaar bestrijding van de echinococcose in de Provincie Friesland. [*Echinococcus* **infection in Friesland.**]—*Tijdschr. Diergeneesk.* **70.** 84–95. **817**

The authors made a survey of hydatid infection in man and animals over the period of 25 years since the enforcement of laws providing for the destruction of infected organs from slaughtered animals, when advice was also given to the public as to suitable precautions against infection. The incidence of the disease in slaughtered farm animals is shown on graphs, there being a noticeable reduction in the number of cases during the years following the adoption of these precautions. The drop in the incidence of the disease is particularly noticeable in pigs and the authors regard this animal as the main source of infection to dogs, and consequently to man or cattle. They attribute the fall in the incidence of human hydatid disease to this factor particularly.—B. W.

LARSH, J. E., Jr. (1946.) **A comparative study of** *Hymenolepis* **in white mice and golden hamsters.**—*J. Parasit.* **32.** 477–479. [Author's summary copied *verbatim.*] **818**

The host relationships of *H. nana* var. *fraterna* were compared in white mice and golden hamsters. The hamsters showed a greater percentage development of adult worms, and their length at eleven days was much greater than those in mice. As was expected from this rate of growth, the pre-patent period of the worms was shorter in hamsters. The patent period, likewise, was much shorter in hamsters.

HAUGE, S. (1944.) Trikinose. [**Trichinosis.**]—*Norsk VetTidsskr.* **56.** 364–382. **819**

H. gives a general account of the life-history of *Trichinella spiralis* and of trichinosis in man and then reviews the position of trichinosis in Norway.

The disease has been observed occasionally

in Norway since 1865, but was not seen at all during 1914–39, although it may have existed to a small extent in wild animals during that period.

In 1940, trichinosis in man was diagnosed twice, in a family of seven persons and in 680 German soldiers, and in 1942 another serious outbreak occurred, again in German troops. In 1941, a general diagnostic campaign was started and many thousands of animals and hundreds of persons were examined. The results for 1941–43 are given, showing host species and geographical incidence. During these three years the following animals were examined (positive cases in brackets): – 45,967 captive foxes (2,853), 123 wild foxes (27), 2,255 mink (252), 331 dogs (3), 34 cats (6), 360 pigs (2), 78 rats (9) and 2,024 human beings (4). Of one beaver, one mouse, two martens and six polecats, none was found to be infected.

A general trichina inspection of slaughter swine was carried out and 16, 10 and 22 positive cases were detected in 1940, 1941 and 1942 respectively. [The total numbers of swine examined are not stated.]

Epidemiology is discussed: there was evidence of transmission between fox and fox, fox and rat, rat and rat, fox and pig, rat and pig, and pig and man. Some instances are given.

The reasons for the sudden appearance of trichinosis in Norway in 1941 were not definitely determined. H. favours the theory that fur animals imported from Canada were the source.

Trichinosis can be controlled by (1) inspection of all slaughter swine, (2) inspection of all pelted foxes and mink, (3) destruction of all trichinous carcasses, (4) rat and mouse extermination and (5) control of the sale of fur animals from infested fur animal farms.—J. E.

DA SILVA LEITÃO, J. L. (1943.) Alguns nematodios do estomago do porco. [**Some gastric nematodes of pigs.**]—*Repos. Lab. Pat. vet., Lisboa.* **5.** 269–278. [English, French and German summaries.] **820**

The stomachs of 100 pigs slaughtered in July in the Lisbon Municipal Abattoirs were examined, and 60 were found to harbour stomach worms Parasites generally have a predilection for the folds of the mucosa on the right side and may often be found here when they are absent elsewhere. Those found were *Ascarops strongylina* in 48%, *Hyostrongylus* sp. in 28%, *Physocephalus sexalatus* in 8%, and *Simondsia paradoxa* in 1%. *A. strongylina*, although commoner than *Hyostrongylus*, is less pathogenic. The *Hyostrongylus* differed somewhat from the accepted descriptions (which also differ among themselves) and may therefore have been a new variety of *H. rubidus* or a new species. Only one *S. paradoxa* was found, a male, but the star-like openings of the empty nodules of the females were common. In the winter, the females are common and are found in nodules between the mucous and muscular coats of the stomach wall. It is believed that at other times they occupy an alternative host.

—R. MACGREGOR.

STEWARD, J. S. (1946.) **The diagnosis of onchocerciasis.**—*Vet. Rec.* **58.** 261. **821**

Detection of adult *Onchocerca* in horses with poll evil or fistulous withers may be attempted either on tissue obtained P.M. or on operation material; in either case the parasite will be overlooked unless the greatest care and diligence is exercised. If the cut surface of fresh material from the ligamentum nuchae is examined at an obtuse angle to the light, the cut ends of the worms may protrude 1–2 mm. from the surface. If this is unsuccessful, sections may be cut and stained and examined for dead or calcified worms, or the tissues may be placed in water for a few days to macerate and any worms recovered later. For the detection of microfilariae, a portion of the skin thickness may be excised and teased out in water, the sediment being later examined for larvae. Serial sections of skin may also be examined, the microfilariae occurring in the subcuticular layer adjacent to and immediately beneath the glandular area. A table, modified from *Traité d'helminthologie médicale et vétérinaire* [NEVEU-LEMAIRE—1936], is given of the more important *Onchocerca* spp., their hosts, habitats and geographical distribution.—J. N. OLDHAM.

See also absts. **837** ("X" disease in cattle), **887-889** (anthelmintics).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

ANDERVONT, H. B. (1946.) **The mammary tumor agent and its implication in cancer research.**—*Yale J. Biol. Med.* **18.** 333–344. **822**

A. states that the mammary tumour agent present in mouse milk is filtrable through Seitz and Berkefeld filters, can be ultracentrifuged, remains active after six months' lyophilization, will survive in the yolk sac of the chick embryo and withstands desiccation at room temperature. In milk it is destroyed at a temperature of 61° C. for 30 min. and in tissue extracts, at a temperature of 56° C. for the same length of time. It is antigenic in rabbits. The agent has been found in the milk of mice of strains with high tumour incidence.

It is emphasized that the milk agent is not the sole cause of mammary cancer in mice. Under varying conditions, hormonal and genetic factors, together with the milk agent, play a part in the aetiology. Tumour development is not necessary for the transmission of the agent from mother to offspring and the condition is said to be an excellent example of latent virus infection.

Mammary carcinoma in mice was prevented by elimination of the hereditary factor by inbreeding and selection, by elimination of the hormone factor by oophorectomy and by elimination of the milk agent by foster nursing.—A. R. J.

WATERS, N. F., & PRICKETT, C. O. (1946.) **Types of lymphomatosis among different inbred lines of chickens.**—*Poult. Sci.* **25.** 501–508. **823**

The incidence of lymphomatosis occurring in 3,256 female White Leghorn chickens up to 600 days of age is analysed. The results are based on observations of six generations of fowls, including 14 different inbred lines, divided about equally in resistance and susceptibility to lymphomatosis. Examination of all chickens revealed 34·3% incidence of lymphomatosis, 24·4% being visceral, 9·8% neural, and 1% ocular.; no other forms of the "avian leucosis complex" were encountered.

The neural type, although occurring at all ages, was most prevalent during the first 300 days of age. Visceral involvement was observed after 30 days and increased in frequency after that period. The ocular type occurred as sporadic cases after 120 days. In certain lines there was a high early incidence of neural lymphomatosis, whilst in others there was a high incidence of the visceral form. This seems to indicate an organ specificity to the disease which can be influenced by genetic selection.—F. D. ASPLIN.

DISEASES [NON-INFECTIVE] OF BREEDING STOCK

ANDRES, J. (1943.) Der sog. Schreckabortus. Zugleich eine Studie über die Ursachen der Trächtigkeitsstörungen bei den Haustieren, besonders beim Rinde. [**So-called "fright abortion", with a study of the causes of pregnancy disorders in domestic animals, particularly cattle.**]—*Schweiz. Arch. Tierheilk.* **85.** 5–18, 49–65, 105–118, 160–168, 193–206, 239–250 & 274–293. **824**

The scope of this considerable review is denoted by the title: and only one of the six chief sections, built up largely from original data of recent date, is concerned with "fright abortion".

The special causes of abortion are considered under (a) infections of the genital tract, (b) influence of weather, diet, management and usage, (c) diseases of the dam and of the foetus, (d) poisoning through the food or by drugs, (e) trauma or surgical operations and (f) psychic influences (fright, fear, etc.). Each section is a literary review with reference lists.

In section (f) is a list of 73 instances of abortion in cows, in which fright shock came up for consideration as the cause; many of these cases were connected with lawsuits or claims against the Swiss army (for discharge of ammunition or explosives within significant proximity to pregnant cattle). In very few cases, however, was any definite connexion recognized as operative: in a few cases a claim was allowed as an *ex gratia* compensation, without admission of liability.

The review as a whole is thorough and is worth study.—J. E.

COSTA GUERREIRO, T. (1945.) A esterilidade e fecundação artificial dos bovinos leiteiros do zono abastecedora do cidade de Lisboa. [**Sterility and artificial insemination of dairy cows in the supply zones of Lisbon.**]—*Rev. Med. vet., Lisboa.* **40.** 32–53. **825**

The milk supply of Lisbon comes from three zones in the neighbourhood of the city, where cows are entirely or almost entirely stall-fed, chiefly on purchased foodstuffs.

Infertility and abortion are seriously affecting these farms, especially those near the city. The order of importance is said to be: contagious abortion, vaginitis, cervicitis, pyometritis, retention of placenta probably due to contagious abortion, persistent corpora lutea, TB. and finally, absence of oestrus due to lack of green food, especially between May and September. Some of these factors could be reduced by artificial insemination which also has other advantages. A scheme for artificial insemination on a voluntary basis is discussed in which the Municipal Milk-Collecting Depots could be used as supply posts for semen.—R. MACGREGOR.

KOCH, W. (1944.) Versuche über die Auslösung einer künstlichen Brunst bei Schafen durch Hormone. [**Experiments in the artificial induction of oestrus in sheep by hormones.**]—*Tierärztl. Z.* No. 1. pp. 1–3. **826**

Oestrus which for dietetic reasons fails to appear regularly in sheep, can sometimes be elicited by hormone treatment, *e.g.*, by small doses of oestrogen or gonadotropin. A similar effect can be produced by other measures, *e.g.*, the feeding of fresh green-stuffs, and K. considers the hormone treatment undesirable. Oestrus can be elicited at non-physiological times by oestradiol

benzoate (about 30,000 I.U.), but the ovary is, of course, not affected. Ovulation can be induced by small doses of gonadotropin, but then oestrus rarely occurs. This treatment is considered to be of no practical importance.—J. M. ROBSON.

RHOAD, A. O. (1944.) **Rate of conception in beef cows pasture-bred during a controlled breeding season.**—*J. Anim. Sci.* **3.** 154–158. **827**

The rate at which conception occurred was studied in beef cows, mostly of the Zebu × Angus and Afrikander × Angus breeds, after bulls had been placed with the cows on pasture at the beginning of the breeding season. The date of conception was not determined by direct observation but was calculated from the date of calving, the breeding season extending over six oestrous periods. 52% of the cows which gave birth to live calves became pregnant during the first 20 days of the season; at the end of 40 days, 80% were pregnant and at the end of 90 days, 90%. There was no material difference in the rate of conception for heifers and cows. On an average, there were 1·81 heat periods per conception.—M. C.

ANON. (1946.) **Congenital defects from German measles.**—*Lancet.* **250.** 201–202. **828**

The association between congenital malformations such as cataract, deaf mutism, etc. in infants and the infection of their mothers with rubella during pregnancy was first reported by GREGG (1941) in Sydney and has since been confirmed by other workers in Australia and in the U.S.A.

The likelihood of such an infection in the mother being the cause of malformations of the child may at first sight appear remote, but the association seems to be well established. [It raises interesting possibilities in veterinary medicine.] The critical period of pregnancy appears to be in the early stages and the nature of the malformation produced is related to the stage of development of the foetus at the time the mother contracts infection. For example, ocular defects occur when the mother is infected during the 4th–8th weeks of pregnancy and cardiac defects in the 5th–8th weeks, that is, when active development of those tissues is taking place.

The manner in which the virus may affect the developing tissues of the foetus is discussed. Many virulent infections may cause abortion or death of the foetus: it is possible that infections other than rubella may affect the developing foetus. The possibility of virus infections of the dam having a causal relationship to foetal malformations in animals offers a field for investigation.

—M. C.

DISEASES, GENERAL

METTLER, F. A. (1946.) **Some neurologic derangements of animals.**—*Cornell Vet.* **36.** 195–200. **829**

This is a brief review in general terms of the varying symptoms in animals associated with pathological processes in the different zones of the central nervous system. Some of the characteristic features of involvement of the meninges, peripheral nerves, spinal cord and forebrain are discussed.—J. KEPPIE.

BENDIXEN, H. C. (1946.) Om Graessyge (Grass sickness) hos Hesten og Sygdommens Optraeden i Danmark. [**"Grass sickness" in Denmark.**]—*Maanedsskr. Dyrlaeg.* **58.** 41–62. [Abst. from English summary.] **830**

B. describes a condition in 18 horses admitted to the Medical Clinic of the Royal Veterinary College, Copenhagen, which appears to have been identical with the "grass sickness" originally observed in Great Britain and which had never been seen in Denmark before 1939; he suggests *Graessyge* as a suitable name for the syndrome.

All the horses came originally from the island of Saltholm, which is not cultivated but kept for continuous grazing, horses, cattle and sheep being shipped there in May and remaining until late autumn.

First symptoms of the disease generally appeared in June: in only three cases were they not manifest until July. Besides the 18 cases admitted to the clinic, nine horses died on the island, apparently of the same disease.

P.M., there was considerable increase in the cerebrospinal fluid and oedema of the brain and spinal cord. In Great Britain, however, it seems that changes in the central nervous system have not been observed.

GILYARD, R. T. (1944.) **Chronic anhidrosis with lowered blood chlorides in race horses.**—*Cornell Vet.* **34.** 332–336. **831**

A brief account, with three case reports, is given of anhidrosis (non-sweating), as it is seen in horses in Trinidad. 15% of young racehorses imported into Trinidad from Great Britain and Ireland are stated to develop this condition, generally within one year of arrival in the tropics. Onset is gradual, the amount of sweat and the sweating areas of the body gradually diminishing. In established cases, the coat remains dry even after severe exercise in direct sunshine. Sudden

deaths occur not uncommonly during a race if such horses are kept in training. If affected horses are put out to pasture and rested, the ability to sweat is frequently restored.

The results of examination of one blood and one urine sample from an affected mare are given. The significant feature was a low blood chloride level, 248 mg. per 100 ml. as compared with a normal level of 420–480 mg. per ml.

A mare which had not sweated for two years was given intravenously 500 ml. of normal saline solution containing 10% glucose. 15 min. after the injection she was galloped six furlongs and sweated on the sides of the neck, behind the elbows and between the hind legs. Following this, she was given half a teacupful of common salt daily in the food and continued to sweat and improved in condition. Fifteen days later the blood chloride level had risen from 248 to 478·5 mg. per ml.

The opinion is expressed that the condition is due to a deficiency of chlorides as a result of feeding insufficient green fodder. The addition of salt to the ration is advocated.

[G. states that the literature available to him did not afford information on the subject. The condition is however well known in many parts of the tropics, such as Calcutta, Rangoon, Penang, Colombo, Singapore, etc., all places with a hot, humid climate: it does not seem to develop in hot, arid climates. In Trinidad, G. states, the condition is rarely seen in locally bred horses. In Calcutta, MacGregor (see *V. B.* **8.** 455) found 6% of locally bred horses affected. In Colombo, Ceylon, where the incidence in racehorses imported from Great Britain, Ireland and Australia is high, the condition is seldom or never seen in Arab horses imported from the Persian Gulf. In a brief reference to the sudden deaths which occur in "dry" horses on the race track, G. mentions one case in which on examination P.M. he found a coronary thrombus. The abstractor has had the opportunity on three occasions of recording the rectal temperature of horses immediately after they had died during the course of a race on the Colombo racecourse. In each case the temperature was 110°F. (the highest point readable on the clinical thermometer) and hyperpyrexia was the most probable cause of death.

The improvement which follows a rest from racing and alteration of the diet, so that it contains a larger quantity of green fodder and less oats, is well known. Improvement also results when horses are taken to a cooler climate. In Ceylon, it is usual to take affected horses from Colombo at sea-level to places such as Newera Eliya at an elevation of 6,000 ft. above sea-level. The improvement which follows either a rest and change of diet or removal to a cooler climate is soon lost when the horse is put back into training on a racing diet or is brought down from the hills to sea-level.

The cause of this condition has not been determined. A humid, hot climate, a diet rich in protein and containing little fresh green food, and fast work, such as racing, are the conditions under which the condition makes its appearance, the basic factor apparently being the hot, humid climate. The disease is well-known to racehorse owners and trainers in the wet tropics. It is a physiological problem of the greatest interest which has not yet been adequately studied. Brief mentions of it occur in the administrative reports of the veterinary services in such places as Bengal, Ceylon, Burma and Malaya, and the following references should be consulted by those interested:– Wright *et al.* (1925.)—*Vet. J.* **81.** 235–240; Barnes—*V. B.* **9.** 410; Stewart—*V. B.* **9.** 261 and **13.** 434.]—M. C.

Robin, V. (1945.) L'encéphalose hépatique du cheval. [**Cerebral symptoms in affections of the liver in horses.**]—*Rec. Méd. vét.* **121.** 33–49. **832**

R. discusses the manifestations of some equine encephaloses which arise from endogenous or exogenous intoxication, in contrast with true or infectious equine encephalitis, in which the cerebral condition has an inflammatory origin accompanied by well known specific symptoms. After mentioning a reported case of encephalosis due to retention of nitrogen caused by failure of adequate renal excretion and its resultant effect on the nervous system, R. reviews the literature on conditions of encephalosis of hepatic origin. [See also *V. B.* **9.** 871; **10.** 188; **13.** 59 and **14.** 342.

Examples have been reported from all parts of the world: from Germany (Schweinsberg and Zdar sickness), Finland, Ireland, N. America (stomach staggers, bottom disease, walking disease, Walla-Walla hard liver disease), Canada (Pictou disease), South Africa (*dunziekte*, *malziekte*) and New Zealand (Winton disease).

Clinical and pathological symptoms are described, with some detailed discussion of the histopathological pictures and emphasis on the dissimilarity of the pathology as presented by various workers. The aetiology of these conditions appears to be indefinite and suggestions have been made, without much conclusive evidence, of alimentary intoxications by *Senecio* spp., *Crotalaria*, *Trifolium hybridum*, and vetches etc. Other workers have suggested, again without definite proof, that the condition may result from certain internal parasitic infestations. Analogies with

similar conditions arising from human liver infections are cited and finally there is a short discussion on various therapeutic measures that have been tried. The difficulties of accurate diagnosis and effective therapeutic measures are emphasized.—A. EDEN.

BRION, A. (1945.) La fluxion périodique des yeux du cheval. **[Periodic ophthalmia of the horse.]**—*Rev. Path. comp.* **45.** 298–312. **833**

This is a general discussion of the disease and of the various theories which have been advanced to explain its aetiology. In France, the incidence is said to be higher in areas with an impermeable clay soil, the worst districts being Bassingy, Aux, Avalon and Anjou. Drainage and improvements in cultivation lead to a decreased incidence. Under French law the disease is scheduled as hereditary. —R. MACGREGOR.

FLORIO, R., & ROUZIÈS, G. (1946.) De l'occlusion pylorique spasmodique chez le cheval. **[Spasmodic occlusion of the pylorus in the horse.]**—*Rev. Méd. vét., Lyon et Toulouse.* **97.** 97–99. **834**

The authors record a case of what they consider to be spasm of the pylorus in the horse, resulting in "gastric indigestion". The animal in question developed colic two hours after a normal meal and was in considerable pain for some four hours afterwards. Examination revealed normal temperature, congested mucosae, accelerated respirations and a pulse rate of 56 per min. The animal was retching and there was evidence of pain in the epigastric region. Borborygmi were absent.

For treatment, the authors injected 20 ml. (10 ml. subcutaneously and 10 ml., very slowly, intravenously) of a 2·5% solution of prosympal (benzo - diethylaminomethyldioxane hydrochlorate), which has a direct action on the sympathetic nerve. This afforded complete relief to the animal after 20 min.—I. W. JENNINGS.

DE MOULIN, F., & FREDERIKS, H. (1940.) Een eigenaardig geval van kreupelheid bij een paard. **[A peculiar case of motor disturbance in a horse.]**—*Tijdschr. Diergeneesk.* **67.** 916–926. [English, French and German summaries.] [Abst. from English summary.] **835**

A peculiar case of motor disturbance in an army horse is described. The animal was sensitive to pressure in the lumbar region, and by rectal examination a dilatation of the aorta where the iliac branches off was found. This was confirmed P.M., when a tumour-like hyperplasia of the medulla of the left adrenal was seen. In the brain and lumbar medulla there was degeneration of the ganglion cells and nerve fibres, together with capillary haemorrhage. The wall of the aorta and its posterior branches was sclerotic.

The authors consider that the hyperplasia of the adrenal medulla was probably the primary cause of the disease, brought about by a histamine toxicosis.

BELLOCQ, P., & LOUF, R. (1944.) Shock mortel lié à un syndrome pluriglandulaire chez le cheval. Prééminence étiologique du cortex surrénal. **[Fatal shock in horses due to disturbance of the autonomic nervous system.]**—*Rev. Méd. vét., Lyon et Toulouse.* **95.** 49–59. **836**

A nine-year-old mare developed signs of shock after an anaesthetizing dose of chloral hydrate, but recovered in 3–4 min. 1½ hours later she was given cocaine hydrochloride subcutaneously and signs of shock reappeared followed by collapse and death. Examination P.M. revealed cystic ovaries, cystic thyroid and hypertrophied adrenals. Sections revealed degenerative changes and giant cell invasion. The glandular lobe of the pituitary was invaded with nodules of eosinophiles and vesicles of colloidal matter. There was no germinal epithelium left in the ovaries. For two months the mare had had a sore on the withers which had resisted treatment, and no appetite, was sluggish in movement and had a depressed look and dull coat. The authors consider that these symptoms indicated adrenal dysfunction with disturbance of the autonomic nervous system and liability to shock.—R. MACGREGOR.

ADAMS, G. B. (1946.) **"X" Disease.**—*Vet. Med.* **41.** 212–213. **837**

An undiagnosed disease attacked a self-contained herd of Hereford cattle causing severe wasting, abortion, and the death of the bull and a proportion of the cows and calves. The cattle were on good pasture and were also being trough-fed. The losses began during a wet autumn following a dry summer. Faecal examination revealed heavy parasitism. The chief symptoms included mucous discharge from eyes and nose, dry, scurfy skin, severe scouring and marked wasting. Anaemia was marked, but blood films failed to reveal any parasite. Acute nephritis was a feature of the autopsy. It is suggested that this outbreak resembled others at present being studied under the name of "X" disease or "wheat poisoning".—J. KEPPIE.

ALLAM, M. W., & BECK, J. D. (1946.) **Meteorological hemoglobinuria in cattle.**—*Vet. Ext. Quart. Univ. Pa.* No. 101. pp. 26–28. **838**

Numerous outbreaks of haemoglobinuria occurred in dairy herds scattered throughout Pennsylvania during one summer and autumn in which the rainfall was heavy. Cattle of all ages were affected, the disease affecting 10–50% and having

a mortality of 3%. Symptoms included haemoglobinuria, severe anaemia, slight icterus, loss of weight and abortion. Nothing characteristic was found at autopsy and the cause could not be ascertained. No specific infection was recognizable and no poisonous plant incriminated. The fact that the cattle were grazing on unusually lush pasture was thought to be an important factor in the outbreaks.—J. Keppie.

Lucam, F., Tisseur, H., & Simintzis, G. (1943.) Taches vertes des muscles chez les bovidés. (Myosite verte ou éosinophilique). **[Green marks on the muscles of cattle (myositis).]**—*Rev. Méd. vét., Lyon et Toulouse.* **94.** 193–199. **839**

Chronic eosinophilic myositis of bovines is a rare affection of muscle tissue characterized by the existence of green spots associated with a significant focal eosinophilia. This paper contains a brief résumé of previously recorded cases, the one case seen by the authors and a discussion, in which the authors attempt to clarify the nature of the local changes as well as the differential diagnosis. The precise cause of the infiltration by eosinophiles and the green coloration of the spots is not yet adequately understood: several theories are quoted.—Lionel M. Markson.

Udall, D. H. (1946.) **Diseases of calves.**—*Cornell Vet.* **36.** 170–180. **840**

U. reviews his experience of calf scours and pneumonia and emphasizes the serious losses from these conditions. Investigations in parts of the U.S.A. revealed that 13% of female calves died of these diseases within their first year. *Bact. coli* and a virus are among the causative agents discussed. Invasion by coliform bacilli from the intestine is held to be an important factor in causing diarrhoea and toxaemia.

Some experiments are reviewed in which faeces from affected calves were shown to contain a filtrable agent capable of infecting healthy calves when given by stomach tube. The therapeutic use of vitamin A and the B complex appears to have been unsuccessful. Warning is given of the danger of overdosing with the sulphonamides. Sulphathaladine, however, is recommended, as it is active in the alimentary tract and is non-toxic; mild cases may be given 1 grain per lb. body weight, but in severe cases the best results follow the early administration of 15 g. four times daily until the diarrhoea ceases.—J. K.

Ukrainczyk-Laborie, F., Laborie, R., & Stratigeas. (1946.) Quelques statistiques concernant les chiens atteints d'eczéma. **[Statistics of dogs with eczema.]**—*Rev. Méd. vét., Lyon et Toulouse.* **97.** 112–116. **841**

The following statistics were collected from the examination of 1,845 dogs, during the year 1940–41. Eczema was most frequently diagnosed, 130 animals being affected. Other common diseases listed were gastro-enteritis, tumours, internal and external parasitism, nephritis and bronchitis.

The eczema cases comprised 57 of the acute and 56 of the chronic type [the remaining 17 are not classified in the article.] Distribution between the sexes was practically equal. Animals 1–5 years of age were most commonly affected.

—I. W. Jennings.

Mettler, F. A., & Goss, L. J. (1946.) **Canine chorea due to striocerebellar degeneration of unknown etiology.**—*J. Amer. vet. med. Ass.* **108.** 377–384. **842**

A detailed clinical description is given of a case of chorea in a dog in which histological examination revealed the main lesions to be those of striocerebellar degeneration and not those usually associated with canine distemper.

—W. M. Henderson.

Magnusson, H. (1945.) Tuberkulosliknande, maligna granulom i tarmen hos höns. **[Malignant granuloma, resembling TB., in the intestine of fowls.]**—*Maanedsskr. Dyrlaeger.* **57.** 301–315. **843**

An outbreak in Skåne of a disease among hens closely resembling intestinal TB. is described. Most cases occurred during 1943 in hens 1–1½ years old.

The symptoms were wasting and diarrhoea, death usually following a short illness. There were many cases of leucaemia amongst the same stock. The lesions found P.M. were much the same in the 22 cases examined. The outer wall of the intestines, especially of the caecum, was studded with nodules very like those found in TB. of the intestines. On the inner wall there was usually ulceration of the mucous membrane where nodules were attached. In most cases the intestines only were involved, but in some few instances there were nodules also in the liver, spleen, kidneys or bone marrow.

Sections of the nodules had, as in cases of TB., central necrotic areas surrounded by giant cells and other areas which had become fibrosed. Some consisted mainly of fibrous tissue; others were highly cellular, containing, apart from the giant cells, lymphocytes, fibroblasts and fibrocytes, with some polymorphonuclear leucocytes and some cells of the epithelioid or macrophage type. The central necrotic portion was amorphous and stained yellow with Van Gieson's stain.

In the active nodules, but not in the necrosing areas, some roundish-oval bodies were seen that might have been of a parasitic nature, though they

seemed practically structureless. They were not unlike the pictures shown by LESBOUYRIES (1941) in *La Pathologie des Oiseaux*, illustrating what he considered to be a case of *Trichomonas* infection in fowls. It was not found possible to transmit the disease to rabbits, mice, g. pigs, white rats or other fowls, by means of subcutaneous or intravenous injection of material taken from a nodule, or by feeding hens with such material. No tubercle bacilli, *Trichomonas* organisms or fungi could be seen in sections of the nodules, nor could they be grown in culture from them. M. remains in doubt as to the cause of the disease.

Good photographs and photomicrographs illustrate the condition and reference is made to various workers who have reported similar cases of disease among fowls. [It is of interest to note that the lesions were not associated with infestation with *Raillietina echinobothrida*.]—M. E. ROBERTSON.

*BOND, R. M. (1943.) **Notes on hawk diseases.** —*Amer. Falconer.* **2.** No. 3. 14–16. [Abst. in *Biol. Abstr.* Sect. F. **19.** No. 5. 36, copied *verbatim.* Signed: W. R. SPOFFORD.] **844**

Hawk "diseases" listed in falconry books are not recognisable as disease entities, and consist primarily of symptoms. A variety of known fowl diseases may be similar in some respects to those unknown in hawks. A list of falcon "diseases" is included with possible fowl diseases which might be responsible for the hawk symptoms.

LOOMIS, D. (1946.) **Hypertension and necrotizing arteritis in the rat following renal infarction.** —*Arch. Path.* **41.** 231–268. **845**

L. explores the following questions. (1) Whether renal infarction has any effects on the circulatory system of the animal, as evidenced by a functional disturbance, such as hypertension, or by structural changes, such as arterial lesions. (2) If so, whether these effects are due to an agent absorbed from the infarcted area; also, the relation between the rate of development of circulatory contact with the necrotic mass and the absorption of the latter, and the rate of appearance and the degree and duration of functional and structural changes. (3) Since infarction of necessity reduces the amount of renal tissue, whether the reduction of renal tissue accounts for some of the effects noted. (4) If so, the relative importance of the two factors, absorption of necrotic tissue and reduction of renal parenchyma.

The rats used weighed 150–225 g. and, apart from normal controls with no operation, were subjected to renal infarction or total or sub-total nephrectomy so as to produce three series, *viz*, with 75% renal substance, 50% renal substance and 25% renal substance. The operative procedure was that described in an earlier publication [LOOMIS & JETT-JACKSON—*V. B.* **13.** 252].

Blood pressure was measured by a method slightly modified from that of Byrom and Wilson. Animals were kept until death or were killed a year after operation and sections of heart, lungs, liver, spleen, kidneys, intestines, pancreas and mesentery were examined microscopically.

L. concludes "that the necrotic renal tissue is the source of vasopressor and necrotizing agents which are absorbed into the blood stream", and postulates "that the vessels become so sensitized to these substances that the vascular reactions, both structural and functional, to these or other similar substances entering the blood stream in minimal amounts as a result of normal metabolism become exaggerated and prolonged. The amount of active renal tissue remaining has an influence in modifying the effects of infarction."

—LIONEL M. MARKSON.

HUEPER, W. C. (1944–45.) **Arteriosclerosis.**—*Arch. Path.* **38.** 162–181, 245–285 & 350–364, and **39.** 51–65, 117–131 & 187–216. **846**

In this review of the bearing of clinical and experimental findings on the problem of the aetiology of arteriosclerosis, H. discusses at length the view that although the condition may be due to many causes, endogenous as well as exogenous, these all act fundamentally by interfering with the oxidative metabolism and nutrition of the vascular wall. The possible aetiological factors are considered to fall into four groups.

In the first group, related to vasotonia, there may be hypotonia, leading to local anoxaemia or hypoxaemia and impaired nutrition from stagnation of the blood flow, or hypertonia, with ischaemic anoxaemia arising from compression of the vasa vasorum by the contracting media and from reduction of the local diffusion processes. The ensuing damage to the vascular tissues, and especially to the endothelium, leads finally to increased permeability with subsequent infiltration by constituents of the plasma.

In the second group, intravascular hydrostatic pressure may be decreased locally or generally as a result of physiological or pathological factors or, on the other hand, local anoxaemic processes may arise from local or general increase of hydrostatic pressure interfering with the blood flow in the vasa vasorum by the mechanical over-extension of the contractile elements of the vessel wall or by compression of the vasa vasorum against the inelastic adventitia.

The third group factors cause an impairment of the exchange of gases and other nutritive material through the interface between the blood and the vascular wall by the interposition of a

film or precipitate formed by a substance deposited as a result of instability of the plasma colloids. This instability may be brought about by a derangement of the relations of the normal colloids, by the appearance of abnormal endogenous colloids in the plasma, or by the introduction of exogenous colloids into the blood. After injuring the endothelial lining, these agents penetrate with the plasma into the intima and finally into the media of the blood vessel and are deposited in the interstices or incorporated into the cytoplasm of cells. In this connexion particular reference is made to cholesterol.

In the fourth group, the anoxaemia is of haematogenous origin and due either to agents producing inert haemoglobin derivatives or to agents causing a disturbance in the oxygen : carbon dioxide balance.

These groups of possible aetiological factors are fully discussed ; the original article should be consulted for details. There are numerous references.—E. COTCHIN.

See also absts. **824** (abortion in cattle), **825** (sterility in cattle), **858** (oesophageal hernia).

NUTRITIONAL AND METABOLIC DISORDERS

ANON. (1946.) **The investigation of nutrition. Attempt to standardize methods.**—*Brit. med. J.* Jan. 19th. 96–98. **847**

This article is an account of two of the publications of the Bureau of Nutrition Surveys set up by the Nutrition Society. Of three panels formed to draw up reports respectively on laboratory methods, clinical methods, and methods of survey of food consumption, reports of the first and third are now available.

The first report makes recommendations with a view to standardizing methods of estimation, apparatus and expression of results. A comprehensive bibliography is appended. The other report outlines methods whereby a quick appraisal of a food situation may be made with specific reference to the abnormal conditions prevailing in Europe. The nutrient values are discussed of indigenous European foods available at the present time, and of foods likely to be imported. The two reports may well be the most comprehensive ever prepared in their respective fields.

—E. M. CRUICKSHANK.

COMMANDEUR, N. A. (1941.) Narcissenbollen als veevoeder. **[Narcissus bulbs as cattle food.]** —*Tijdschr. Diergeneesk.* **68.** 403–404. **848**

C. reports the use of narcissus bulbs as an emergency feed for cows. The percentage composition is said to be :– protein 2·5, fat 0·3, carbohydrate 29·6, mineral matter 1·3, moisture 64·5 and indigestible material 1·8. Although several contributors to agricultural papers maintain that the bulbs are toxic, C. states that the toxic action of the alkaloid(s) contained can be completely eliminated by the method of feeding. Cases of poisoning do occur at times, usually on the first or second day following the inclusion of bulbs in the daily ration. Fresh as well as stored bulbs may cause poisoning. Increasing amounts of bulbs were fed experimentally to cattle and no cases of poisoning occurred. C. concludes that when animals have established a tolerance for the alkaloids they retain that tolerance, and the following season the maximum amount of bulbs can be included in the ration from the beginning. Where animals have not previously been fed on bulbs, farmers are recommended to start with small amounts and to increase the amount gradually. For the first week, 0·25 kg. is recommended daily, to be doubled each week until a total of 4 kg. per day is reached by the fifth week.

—P. L. LEROUX.

SCHWARZ-WENDL, C. (1946.) Gibt es eine alimentäre Glykosurie beim Haushuhn ? **[Glucose metabolism in fowls.]**—*Wien. tierärztl. Mschr.* **33.** 3–6. [English, French and Russian summaries.] **849**

Fowls were used to study the ability to store relatively large quantities of sugar, when glucose was administered orally. The fowls were fasted for about ten hours and the blood sugar level determined. Glucose was administered in a 50% solution orally to different birds in quantities varying from 1–10 g. per kg. After 30 min. and then at half-hourly intervals the blood sugar level was determined, and during the following 24 hours urine and faeces were tested for sugar qualitatively. Hyperglycaemia was produced in each case. The blood sugar values increased as the quantity of administered glucose increased in one case to more than twice the fasting value ; they rapidly reached a maximum, in some cases after 30 min., and after 1½–2 hours the values were again at fasting level. No glycosuria was observed. Poultry may possess a special capacity for storing sugar.—E. M. J.

HOUK, A. E. H., THOMAS, A. W., & SHERMAN, H. C. (1946.) **Some interrelationships of dietary iron, copper and cobalt in metabolism.** —*J. Nutrit.* **31.** 609–620. **850**

Rats were fed a specially purified diet adequate in most essential factors, but low in Cu, Fe and Co. After being divided into groups of similar sex, live weight, Hb level and heredity, they were fed *ad lib.* the basal diet supplemented with Fe, Cu and Co in various combinations ;

food consumption records were kept, their live weights were determined weekly and their Hb levels twice a month. Initially and after 30 and 60 days under the experiment, equal numbers of animals from each group were killed and the total carcass (excluding the alimentary tract) was analysed for Fe, Cu and Co.

It was found that low levels of Fe or Cu lowered food intake, growth and Hb level, but that quantities of 0·003–0·08 p.p.m. Co in the diet had no effect upon them. Retention of Co at the 0·003 p.p.m. level was 30–42% and at 0·08 p.p.m. was 3·3–4·9%. The Co content per g. fresh rat carcass varied with the diet, age and sex of the animals. Fe and Cu did not affect Co retention, neither had Co any marked effect upon Fe and Cu retention. The small amounts of Fe and Cu in the basal diet were poorly utilized by the rat. Added Cu doubled the Fe retention and added Fe had a small, insignificant effect on Cu retention at the levels of Fe intake employed. The body conserved its Fe with relatively greater efficiency than its Cu. Anaemic rats retained more of these elements than normal animals on the same diet, but normal animals gradually becoming anaemic on a Cu-low diet, retained less Cu than litter mates in better condition on a good Cu diet.—A. EDEN.

KRAKOWER, C. A., & GOETTSCH, M. (1945.) **Effect of excessive ingestion of sodium chloride on the chick, with particular reference to renal changes.**—*Arch. Path.* **40.** 209–219. **851**

Mortality ranging from 50–100% occurred amongst chicks 10–20 days old as a result of the use of a new consignment of food which was found subsequently by chemical analysis to contain 2·87% of sodium chloride. Extensive experiments were then carried out, in order to study the effect of excessive salt intake on chicks. The symptoms and gross and microscopic pathological changes are described in detail. Blood was analysed for total plasma protein and for sodium chloride, and the protein content of ascitic fluid was determined; in some experiments haematocrit readings were also recorded.

The authors consider that the pathological changes associated with the ingestion of excessive amounts of salt are due to the accompanying excessive consumption of water. Renal changes were very marked in all chicks receiving excess salt and consisted of glomerular hypertrophy, together with the formation of loops and lobules. It was concluded that an extension of this process, together with cardiac hypertrophy, is the main anatomic factor concerned in determining the survival of a chick.—J. D. BLAXLAND.

JUNGHERR, E. (1945.) **A-hypovitaminosis in commercial poultry flocks on basis of nasal histopathology.**—*Poult. Sci.* **24.** 112–119. **852**

Over a period of 12 months the "nasal histopathology" [see JUNGHERR—*V. B.* **14.** 348] of 60 out of 354 chickens examined indicated vitamin A deficiency. In very few cases were there whitish flakes in the conjunctival sac, considered suggestive of vitamin A deficiency, so that without microscopic aid the condition would not have been generally recognized. In four groups of chicks, 2–14 days old, there were well developed lesions indicating egg-borne or parent-stock deficiency.

Statistical analysis of the data for chickens failed to correlate vitamin A deficiency with breed, sex or season, with management, or with the principal other diseases diagnosed.

Significant vitamin A differences in 38 known brand foods were noted.—J. D. BLAXLAND.

PETRI, S., NØRGAARD, F., TRAUTNER, K., & KIOFR, W. (1943.) **On the changes produced by experimental resection of the fundus of the stomach in pigs.**—*Acta med. scand.* **114.** 184–209. [In English.] **853**

In an attempt to elucidate the part played by the fundic portion of the stomach, this region was removed partially in eight pigs and completely in 14; the animals were about eight weeks old. Half of the animals subjected to partial excision and all except two of those in which total excision was carried out, developed pellagra-like symptoms (retardation of growth, dermatitis, microcytic anaemia, persistent tremor, spastic paralysis). The histological changes found at autopsy included degeneration of nerve cells in the brain and spinal cord and degeneration of myelin sheaths in the spinal cord and medulla.

The animals were given a diet of crushed barley and maize, rye bread, milk, porridge and boiled potatoes, and received chalk and cod liver oil. The results are considered to support the view that pellagra is endogenous in origin and that the fundic portion of the stomach is necessary for protection against this condition. This experiment confirms work by the same authors on the occurrence of pellagra in various species of animals subjected to total gastrectomy.

[In discussing the causation of the syndrome produced by gastrectomy the authors mention that parenteral administration of vitamin B_1, nicotinic acid and riboflavin is ineffective in preventing its development. In this connexion it is of interest that WINTROBE *et al.*—*V. B.* **14.** 102—described similar symptoms and lesions in pigs given a diet free from the components of the vitamin B group but supplemented with all the various crystalline factors of this group except pyridoxine. See also abst. following.]—E. G. W.

PETRI, S., NØRGAARD, F., & KIØER, W. (1944.) Undersøgelser over den experimentelle gastroprive Pellagras Aarsagsforhold. IV. Therapiforsøg paa totalt gastrectomeret Gris med praeventiv parenteral Indgift af Vitamin B_6. **[Notes on the causation of experimental gastroprival pellagra. IV. Therapeutic experiments on a pig with preventive parenteral administration of vitamin B_6.]**—*Nord. Med.* **24.** 2210–2212. [Authors' English summary slightly amended.] [For part II, see *V. B.* **13.** 396.] **854**

A totally gastrectomized pig was treated parenterally and preventively with vitamin B_6 ("Bayer") for a period of 395 days. The daily dose per kg. body weight was 23–65 μg., and the total dose 769 mg. of pyridoxine hydrochloride. The total observation period was 409 days.

The vitamin therapy had a pronounced effect on several of the gastroprival neurocutaneous symptoms. The capacity of this vitamin to prevent completely the degenerative changes in the central nervous system must be particularly emphasized.

This experiment has confirmed the experience of similar previous therapeutic experiments on pups. The effects of the treatment were of the same nature in the two species, but in some respects deviated slightly in degree. The preventive dose used for the totally gastrectomized pig was smaller than that required by the pups after the same operation.

Of the B vitamins so far examined in this way, vitamin B_6 is the only one with any therapeutic effect on the gastroprival neurocutaneous complex of symptoms, vitamins B_1, riboflavin, and nicotinic acid being ineffective in this respect.

See also abst. **862** (nutrition and selenium poisoning).

BUENO, P. (1945.) Pesquizas sôbre a paralisia dos suinos. **[Researches on swine paralysis.]**—*Arq. Inst. biol., S. Paulo.* **16.** 1–14. [Abst. from English summary.] **855**

In an effort to discover the cause of posterior paralysis in swine, 46 pigs were fed on various rations deficient in proteins, vitamins or green food. Deficiency of green food alone and of proteins and green food produced symptoms of the disease, but these were not evoked by absence of protein other than that in green fodder. B. concludes that deficiency of an unknown factor present in green food is responsible for the disease and confirms this by observations of the disease under natural conditions.

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

DE GROOT, T., & VAN DER PLANK, G. M. (1941.) Over het melkzuurgehalte van het bloed van paarden in verband met hun trainings toestand. **[The lactic acid content of the blood of the horse, in relation to its degree of training.]**—*Tijdschr. Diergeneesk.* **68.** 405–412. [English, French and German summaries.] [English summary slightly amended.] **856**

The lactic acid content of the blood of horses at rest is about 10–14 mg. %. In thoroughbred horses galloped for 15 min. the concentration rose to about 20 mg. %; in non-thoroughbreds it rose to 30 and even to nearly 70 mg. %. A totally untrained non-thoroughbred with cardiac insufficiency and kidney disease had a similar increase after far less exertion.

PAYNE, M. G., CLARK, A. G., KINGMAN, H. E., & STANSBURY, W. M. (1946.) **Blood levels of calcium and inorganic phosphorus in Hereford cattle.**—*J. agric. Res.* **72.** 357–363. **857**

Serum Ca and inorganic P determinations were made on range Hereford cattle selected at random and the accompanying table summarizes the average observations made on 560 samples according to sex.

	Serum Ca mg. %	*Serum inorganic P mg. %*
Yearling bulls	10·46 ± 0·238	7·30 ± 0·103
Herd bulls...	13·03 ± 0·256	4·76 ± 0·099
Two-year-old heifers	9·13 ± 0·158	5·07 ± 0·063
Aged cows...	9·52 ± 0·249	4·89 ± 0·101

The serum P level was greater in bulls than in cows and diminished with age in all Hereford cattle, but particularly so in the male. Correlation studies of the data were also made. It appears that the Ca : P ratio in homogeneous groups was somewhat variable and depended both on age and sex.—A. EDEN.

DEY, F. L., GILBERT, N. C., TRUMP, R., & ROSKELLEY, R. C. (1946.) **Reflex shortening of the esophagus in the experimental animal with the production of esophageal hiatus hernia.**—*J. Lab. clin. Med.* **31.** 499–506. **858**

Some cases of oesophageal hiatus hernia can be attributed to an increase of intra-abdominal pressure, but in other cases a neurogenic factor may be responsible. Experiments conducted on dogs to determine whether vago-vagal reflexes were involved, demonstrated that mechanical stimulation of viscera in the upper abdomen caused reflex shortening of the oesophagus with production of hiatus hernia due to traction upon the stomach. Control experiments carried out at the same time on the same animals by electrical stimulation of the vagus nerve produced similar results. Technical details of experimental procedure are given.—C. W. Ottaway.

Riddle, O., & Lahr, E. L. (1944.) **Relative ability of various steroid hormones to promote growth in oviducts of immature ring-doves.**—*Yale J. Biol. Med.* **17.** 259–268. **859**

Tests were made of the ability of various steroid hormones dissolved in oil to promote growth of the oviducts of immature ring doves injected daily over a period of seven days. Studies were also made of the effects of dosages at various levels and of variations in the volume of oil used for injection. Of the various compounds studied, diethylstilboestrol proved to be the most active stimulant of oviducal growth. Progesterone enhanced the growth-promoting action of oestrogen. On the other hand, there was some evidence that the oestrogens retarded or suppressed growth in the ovaries.—A. Eden.

See also abst. **915** (textbook on sex hormones).

Cowles, R. B. (1946.) **Fur and feathers: a response to falling temperature?**—*Science.* **103.** 74–75. **860**

The concept that furs and feathers in mammals and birds were developed in response to a need for some mechanism for heat conservation is disputed on both phylogenetic and ontogenetic evidence which indicates that thermal regulation and the development of warm-bloodedness is a later evolutionary acquisition. Nevertheless, the presence of an insulating coat probably assisted the perfection of the heat-regulating system in the course of evolution. It is suggested that furs and feathers function as mechanisms to retard both accession and loss of heat.—C. W. Ottaway.

Hughes, H. V., & Dransfield, J. W. (1946.) **The digastricus muscle of the dog.**—*Vet. Rec.* **58.** 262. **861**

Dissection of the head region of 20 dogs revealed the presence of a tendinous inscription running across the digastricus muscle dividing it into an aboral portion, innervated by branches of the seventh cranial nerve, and an oral portion, supplied by one or two branches of the mylohyoid branch of the fifth cranial nerve. There is every justification, therefore, for regarding this seemingly monogastric muscle as the homologue of the digastricus muscle of other species.—C. W. O.

POISONS AND POISONING

Rosenfeld, I., & Beath, O. A. (1946.) **The influence of protein diets on selenium poisoning. I. II. The chemical changes in the tissues following selenium administration.**—*Amer. J. vet. Res.* **7.** 52–56 & 57–61. **862**

I. Rations containing 20, 12 and 1·5% digestible protein were fed to three groups of five yearling ewes prior to and during drenching with selenium in doses of 10–30 mg. daily until all the animals from each group had symptoms of intoxication.

The intake of 10 mg. of selenium daily did not produce marked intoxication in the animals, but after 25 days food intake was reduced 22, 6 and 44% in the high, medium and low protein groups respectively. The intoxicating dose in the low protein group was 15 mg. of selenium given for six days, while in the higher protein groups, 20 mg. of selenium was administered for 25 days before producing toxic symptoms. The fatal dose in the high and medium protein groups was 30 mg. of selenium for 30 days, and in the low protein group, 20 mg. for 13 days.

The selenium content of the blood in the low protein group reached a higher level with a lower selenium intake, than in the groups which received high and medium protein diets.

Symptoms of intoxication occurred in all groups when the blood contained 1·2–1·5 p.p.m. of selenium, and death occurred after the concentration of blood selenium was increased above 2 p.p.m. and selenium feeding was continued.

II. Blood samples taken at regular intervals from experimental animals used in I, were analysed for vitamin A, ascorbic acid, total protein, non-protein nitrogen, inorganic phosphorus, and calcium.

There was a gradual decrease in the vitamin A and total protein content of the blood and a more rapid decrease in ascorbic acid. Non-protein nitrogen in the blood increased in all animals which died from selenium poisoning.

The total nitrogen and total sulphur content of heart, lungs, kidneys and spleen of animals which received selenium until death, and of animals which were killed when the selenium

drench had been discontinued for 61 or 64 days, were determined. The observed changes produced in the liver by selenium poisoning were depletion of protein and sulphur and a decrease of vitamin A and ascorbic acid.

The depletion of nitrogen was not restricted to the liver, but occurred also in the heart in some groups. The kidneys, lungs and spleens had no changes in nitrogen and sulphur content.

The changes which occurred when selenium feeding was discontinued indicated that the decrease of the blood constituents was temporary in nature.—H. PAVER.

TAGGART, R. S. (1946.) **DDT.**—*Cornell Vet.* **36.** 159–169. **863**

T. summarizes the results obtained to date in insect control with D.D.T.

D.D.T. has unusually great residual effects and is highly toxic to many insects of veterinary and medical importance. In most insects it is less toxic to the immature stages than to the adult forms, but fortunately it has proved itself a most efficient mosquito larvicide. It has also been successfully used in mange treatment in an emulsion containing benzyl benzoate and benzocaine.

D.D.T. has a low toxicity to mammals, but it can kill domestic animals when fed in large amounts and can be absorbed through the skin when in solution in organic solvents. Simple precautions should therefore be taken to prevent undue exposure of human beings and animals to the entry of D.D.T. into the body. The symptoms of D.D.T. poisoning in laboratory animals are loss of appetite, hyper-excitability, tremor and convulsions; animals given D.D.T. until death results frequently have toxic necrosis of the liver and kidneys. In the treatment of D.D.T. poisoning, long-acting central nervous system depressants should be used. If there is clinical evidence of hepatic insufficiency, routine procedures for the treatment of hepatic lesions should be employed. If D.D.T. is accidentally eaten, local measures are effective if promptly undertaken, as the rate of absorption is slow.—L. DAVIES.

WHITTEN, L. K., CLARE, N. T., & FILMER, D. B. (1946.) **A photosensitized keratitis in cattle dosed with phenothiazine. [Correspondence.]** —*Nature, Lond.* **157.** 232. **864**

The authors collected from 25 farms in New Zealand records of ocular trouble appearing a few days after the administration to calves of ordinary doses of phenothiazine. The condition took the form of profuse lachrymation with peri-ocular swelling, followed by diffuse corneal opacity. In some cases this cleared up within ten days, but in other cases ulceration followed.

The condition was reproduced in experimental calves and could be caused by the pure or the "conditioned" drug. There was definite evidence of photosensitization. Studies to discover the cause and pathogenesis are continuing. —J. E.

VAN DER WALT, S. J. (1944.) **Recent investigations into the toxicity of plants, etc., in the Union of South Africa. [XIV.]**—*Onderstepoort J. vet. Sci.* **20.** 75–83. [For part XIII, see *V. B.* **16.** 369.] **865**

The toxicity of 16 plants was investigated. Five proved to be poisonous:—*Senecio isatideus* D.C. [Compositae], *Encephalartos horridus* Lehm. Cycadaceae], *Royena decidua* Burch., *Eucomis undulata* Ait. [Liliaceae], and *Scilla rigidifolia* Kunth [wild squill], the last four being shown to be toxic, the author believed, for the first time. Details of the symptoms and the P.M. findings in experimental sheep and rabbits are given.

The toxicity for sheep was determined of Dowicide P, a fungicide used in the control of sap stain and mould in wood.—H. PAVER.

MARAIS, J. S. C. (1944.) **Monofluoroacetic acid, the toxic principle of "gifblaar"** *Dichapetalum cymosum* **(Hook) Engl.**—*Onderstepoort J. vet. Sci.* **20.** 67–73. **866**

The toxic principle was isolated from *Dichapetalum cymosum* [poison leaf], and was identified as monofluoroacetic acid (CH_2FCOOH). The potassium and calcium salts, and the *p*-nitrobenzyl and *p*-bromophenacyl esters of monofluoroacetic acid are described. In the rabbit, 0·5–0·75 mg. potassium monofluoroacetic per kg. body weight caused death. Analysis of the dried plant collected in early spring gave a fluorine content of 0·015%. Assuming that all the fluorine is present in the form of monofluoroacetic acid, 0·5–0·8 g. of the dried plant material per kg. should cause death. Dosing experiments showed that the lethal dose for this sample of plant material lay between 1 g. and 1·5 g. per kg. for the rabbit.—H. PAVER.

See also absts. **848** (narcissus bulbs), **910** (lead poisoning in ferrets), **912** (phosphorus poisoning in cattle).

PHARMACOLOGY, THERAPEUTICS AND DISINFECTION

STURA, C. A. (1943.) Nuevas orientaciones de la seroterapia normal. Empleo del suero de cerdo. **[Developments in serum therapy. Use of pig serum.]**—*Gac. vet., B. Aires.* **5.** 134–143, 195–227 & 258–275. **867**

It is claimed that pig serum can be used therapeutically in man against infections of bacilli of the colon-typhoid-paratyphoid group, whether

in the intestines, the bile ducts or the urinogenital tract. Best results were obtained from a mixture of sera from at least 50 pigs, some 6–8 months old and the rest over 16 months, which was administered *per os* or rectally in doses of 30–60 ml. according to the severity of the infection; no allergic response or intolerance was provoked. Blood was collected at the time of slaughter from apparently healthy animals and the serum sterilized by filtration and sealed in ampoules. Serum from pigs hyperimmunized against colon-typhoid-paratyphoid organisms was not superior to serum from normal pigs. Serum from other animals, *viz*, horse, ox, goat and sheep, possessed no similar properties. It is suggested that the pig possesses a natural immunity against colon-typhoid-paratyphoid organisms. This may be either congenital or acquired: S. believes that it is acquired by constant ingestion of soiled food [he does not seem to have examined sera from cleanly fed pigs].

In part I of the paper, results are given of chemical analyses of sera from 500 pigs, calling attention to the high proportion of lipoids and fats. In part II, methods are described for estimating the comparative value of the bacteriotropic, bacteriolytic and bactericidal powers of a serum, its opsonic and immunotropic power, together with an account of the action of each of these factors on bacteria and details for estimating the quantity of complement present and its action on bacteria. Finally, methods are described for determining enzyme activity and lipase content, pepsin being used as the standard.

No cases are quoted and no figures given, except for the chemical analyses in part I.

—R. MACGREGOR.

LÄUGER, P., SUTER, R., & MARTIN, H. (1944.) Zusammenhänge zwischen Konstitution und Wirkung bei Sulfonamiden. [**Relation between constitution and action of sulphonamides.**]—*Z. ImmunForsch.* **105.** 78–96. **868**

The activity of a number of N_1-acyl-*p*-aminobenzene sulphonamide derivatives against streptococcal, pneumococcal and *Bact. coli* infections in mice was investigated. The introduction of groups capable of resonating into the sulphonamide molecule should lead to an increase in activity, but actually this is greatly dependent on the constitution of the substituent group; the number and position of methyl groups are of particular importance. Compounds vary widely in their relative activities against the different bacteria.—J. M. ROBSON.

KIRK, H. (1946.) **Organo-mercury compounds in veterinary medicine.**—*Vet. Rec.* **58.** 299–300. **869**

The successful treatment of human skin diseases of bacterial and fungous origin with ointments containing phenyl mercuric compounds led to the suggestion that these compounds might be of value in similar conditions in animals. Of the phenyl mercuric salts the chloride is the most effective and safest to handle. Phenyl mercuric salts have a much greater bactericidal power than mercuric chloride, with the added advantage that they are not inactivated in the presence of pus, serum or body fluids and do not precipitate proteins. They have a vesicant action at concentrations many hundred times greater than those at which they are bactericidal.

A severe case of ringworm in a Scottish terrier was treated with a 0·25% phenyl mercuric ointment which was washed off after three hours, re-applied the next day and then left. Apart from a slight local vesicant action, the ointment had no untoward effects on the dog's skin and the condition rapidly cleared up. In view of this success and reports of similar cures in human beings, K. suggests that a specific remedy against ringworm in animals is at last available.—A. EDEN.

FREI, W., & JEZIERSKI, A. (1945.) Chemotherapeutische Versuche mit Sulfanilamiden bei der Geflügelcholera- und Rotlaufinfektion der weissen Maus. [**Experimental sulphonamide therapy of fowl cholera and swine erysipelas.**]—*Schweiz. Arch. Tierheilk.* **87.** 136–142. **870**

Sulphathiazole, sulphapyridine and irgafen [N_1-3,4-dimethylbenzoyl sulphanilamide] can cure experimental fowl cholera in mice provided the treatment is started at the time of infection; experimental infections with the organisms of swine erysipelas are not beneficially affected by these sulphonamides. The drugs are more effective against the fowl cholera organism *in vitro* and inhibit its aerobic and anaerobic oxidation more than that of the swine erysipelas organism.

—J. M. ROBSON.

BARNETT, S. F. (1946.) **Phenanthridinium compound 1553 in the treatment of T. congolense infection in grade cattle.**—*Vet. Rec.* **58.** 325. **871**

In tests of phenanthridinium 1553 in the treatment of *T. congolense* infection in six cross-bred Zebu-European cattle, the minimal curative dose was 1·25 mg. per kg. body weight when given intramuscularly. Four animals which relapsed to treatment with smaller doses were cured with a second dose of 2 mg. per kg.; it thus seems unlikely that drug-fastness develops.

The drug was injected subcutaneously, intramuscularly and intravenously in solutions of 0·5% and 2%. Intravenously the 2% solution caused a thrombosis and local swelling which was still present after six weeks. Intramuscular injection caused swelling and lameness persisting

for a month. Subcutaneous injection caused a swelling which gradually decreased in size, with some loss of hair, but no slough.—U. F. R.

LAUNOY, L., & LAGODSKY, H. (1946.) De l'action préventive d'une diamidine aromatique : la diamidino-diphénoxypentane, sur deux trypanosomoses expérimentales du rat. [**The preventive action of pentamidine on experimental *T. brucei* and *T. evansi* infections in the rat.**]—*Bull. Soc. Path. exot.* **39.** 160–167. **872**

Further experiments are recorded on the value of pentamidine as a protective agent against *T. brucei* and *T. evansi* infections in rats. In *T. brucei* infections the curative dose for 100 g. rats was determined as 0·5 mg. given subcutaneously, whilst the period of protection increased from 14 days with this dose to about 30 days with a dose of 2 mg., and 45 days with a dose of 15–20 mg. Particularly when there was a long interval between the drug injection and the trypanosome inoculation, a few parasites appeared in the blood after 2–3 days, but they did not persist. For *T. evansi*, the curative dose was determined as 6 mg.; preventive doses of 10–15 mg. proved effective only up to ten days in 50% of rats, although larger doses appeared to give longer protection. When protection was not complete, it was noted that the incubation period after inoculation was prolonged.—U. F. RICHARDSON.

BIOCCA, E., & NOBREGA, P. (1945.) Sôbre a quimioterapia da toxoplasmose. [**On the therapeutic effect of sulphonamide compounds against toxoplasma infection.**]—*Arq. Inst. biol., S. Paulo.* **16.** 83–87. [Abst. from English summary.] **873**

Sulphadiazine and dichlorone [a sulphone] administered subcutaneously in an oil suspension had therapeutic action against experimental toxoplasmosis. Under similar conditions diasone had no effect.

Sulphadiazine, dichlorone, 117 M and formilone [a sulphone] were similar in therapeutic value and markedly superior to sulphathiazole.

All treated animals were resistant to reinfection.

I. BRACKETT, S., & WALETZKY, E. (1946.) **The antimalarial activity of metachloridine (2-metanilamido-5-chloropyrimidine) and other metanilamide derivatives in test infections with *Plasmodium gallinaceum*.**—*J. Parasit.* **32.** 325–339. **874**

II. HUGHES, C. O., & BRACKETT, S. (1946.) **The prevention of sporozoite-induced infections of *Plasmodium cathemerium* in the canary by metachloridine.**—*Ibid.* 340–344. **875**

I. Metanilamide and 42 of its derivatives were examined for their relative antimalarial activities on sporozoite- and blood-induced infections of *P. gallinaceum*. Of these the most active were 2-metanilamido-5-chloropyrimidine (metachloridine) and its bromine and iodine analogues which proved to be 16 times as active as quinine or sulphadiazine. Sporozoite-induced infections were prevented by as little as 5–10 mg. of metachloridine per kg. per day. Blood-induced infections were suppressed by 2 mg. per kg. per day. Established infections were not eradicated by maximum tolerated doses giving blood levels of about 30 mg. per 100 ml. As metanilamides are active against *P. cathemerium*, are not readily antagonized by *p*-aminobenzoic acid and are ineffective against *Eimeria tenella* and several species of bacteria, it is thought that they act by a mechanism which differs from that of the sulphonamides. The most active metanilamides are those with N^1-pyrimidine substituents. Metachloridine was ineffective against *Trypanosoma equiperdum*, *T. cruzi*, *Leishmania donovani* and *Schistosoma mansoni*.

II. Metachloridine was active against sporozoite-induced infections of *P. cathemerium* in canaries. 2-metanilamido-pyrimidine prevented infection in one of three birds, and greatly prolonged the incubation period in the other two. Blood-induced infections of *P. cathemerium* were suppressed by metachloridine, 2-metanilamido-pyrimidine and 2-sulphanilamido-5-bromo-pyrimidine.—C. HORTON SMITH.

GUILHON, J., & VATTAIRE, M. (1942.) Remarques sur le traitement de la piroplasmose du cheval par le zothelone. [**" Zothelone " (acaprin) in the treatment of equine piroplasmosis.**]—*Rev. Méd. vét., Lyon et Toulouse.* **93.** 103–105. **876**

It is considered that in old horses, or in animals with cardiac disease, it is advisable to avoid the use of acaprin which may cause death in such subjects. In horses over 700 kg. in body weight 6 ml. of a 5% solution is insufficient and relapses may occur, but these can be avoided by using 8 ml.—U. F. RICHARDSON.

NOBREGA, P., & BUENO, R. C. (1945.) A ação da penicilina na espiroquetose aviária. [**On the treatment of avian spirochaetosis with penicillin.**]—*Arq. Inst. biol., S. Paulo.* **16.** 15–17. [English summary slightly amended.] **877**

The experiments here reported show that fowl spirochaetosis may be completely cured by the intramuscular administration of penicillin.

Nine out of ten experimentally infected fowls were found to be free from spirochaetes 24 hours after the injection of the first dose of the drug. All of the treated birds survived, while in the control flock the average mortality was 80%. The total amount of penicillin used for each bird was

rather high, 10,000 units, administered in 5 injections of 2,000 units each, with an interval of 3 hours between them.

Penicillin-treated animals were completely immune to reinfection.

The authors are now trying to ascertain the minimal curative dose of the drug and are investigating the possibility of curing infected birds with one dose of penicillin.

WILSON, H. F., & JACKSON, M. L. (1946.) **Effect of mineral composition and particle size in dispersants on toxicity of rotenone dusts.**—*J. econ. Ent.* **39.** 290–295. [Authors' conclusions copied *verbatim.*] **878**

The presence of small particles, particularly in the colloidal size range, has a hindering effect on the toxic values of rotenone dusts. When the average particle size of a dispersant is too large (60-mesh) the toxic efficiency of rotenone dusts is less than with intermediate size particles (200 to 325 mesh). If the majority of the particles are very small (1 to 10 microns), the efficiency is greatly reduced. Colloidal particles found in many dispersants tend to cover the cubé and derris particles so they cannot come in contact with an insect.

The main sources of colloidal particles in dispersants are free ferrous and ferric oxide, and chloritoid minerals (especially those high in ferrous iron) which are easily fractured to small particle size.

Pure quartz has been found to be the best available dispersant for rotenone but is undesirable because of its high abrasive qualities.

Pyrax (pyrophyllite, quartz, and mica) has been found to be an excellent dispersant, because being comparatively free of either ferrous or ferric iron, few colloidal particles are present. This material is high in quartz which also gives it the properties of quartz, but with less abrasiveness which occurs at the cleavage planes, than pure quartz because of the lubricating properties of the pyrophillite cleavage planes.

Talc is a good dispersant when few colloidal particles are present, but if ferrous or ferric iron is present in a marked degree, colloidal particles are usually present in sufficient amounts to affect the efficiency of rotenone dusts.

Iron, either in the ferrous or ferric state, does not cause direct deleterious chemical effect on rotenone.

SCHAAF, J. (1943.) Vergleichende Versuche zur Schwefeldioxydgewinnung durch Verbrennung von Schwefel und Diametan für die Begasung räudekranker Pferde. **[Treatment of mange in horses with sulphur dioxide and " diametan "].** —*Dtsch. tierärztl. Wschr./Tierärztl. Rdsch.* **51/49.** 167–169. **879**

" Diametan " is sulphur plus a catalyst, and thus burns more easily than ordinary sulphur, leaving little ash and giving a quicker and higher SO_2 production. 90–100 g. of " diametan " per cu. m. of air gave a SO_2 concentration of 3·5–4%. The method gives a more uniform SO_2 production than that from burning ordinary sulphur, and is more convenient than using SO_2 gas cylinders. No details are given of field trials, but S. claims good results.—BERYL THURSTON.

WEBSTER, M. H. (1946.) **The use of DDT as an insecticide.**—*J. R. sanit. Inst.* **66.** 25–34. Discussion pp. 34–35. **880**

An account is given of the scope and methods of using D.D.T. in the control of insect pests in and around human dwellings and of the apparatus now available for applying it. In this field, D.D.T. gives better results than the insecticides hitherto used, but its efficacy does not justify the abandonment of existing sanitary measures, such as the removal of all possible fly-breeding material around human habitations. Simple precautions in its application eliminate all chances of harm to man, and the D.D.T.-in-oil solutions and emulsions used to kill mosquito larvae are unlikely to be harmful to domestic animals which drink from treated ponds.—L. DAVIES.

TELFORD, H. S. (1945.) **DDT as a chicken louse control.**—*J. econ. Ent.* **38.** 700–703. **881**

D.D.T. administered orally to poultry did not control body or shaft lice. Dipping birds in a 0·03% emulsion gave complete control in four hours, and the treated birds remained free from reinfestation for over 40 days.

Spraying birds individually with a 2·5% emulsion resulted in complete control of body and shaft lice in 40–48 hours. When released into an infested flock these birds remained free of lice for 15–19 days.

Spraying floors, roosts and nests in hen houses with a 2·5% emulsion at the rate of 6·3–20 ml. per square foot gave complete control within a period of 26 days.

The application of dusts containing 2–5% D.D.T. to floors, roosts and nests at the rate of 0·8–3·9 g. per square foot was generally unsatisfactory.—W. MOORE.

SALCÉS, F., & CALVO, S. P. (1945.) Ensayo experimental con D.D.T. sobre Oestrus ovis. **[Experimental trial of D.D.T. against *Oestrus ovis.*]**—*Rev. Med. vet., B. Aires.* **27.** 137–142. [Also appeared in *Bol. tec. Direct. gen. Ganad., B. Aires.* No. 12. pp. 13–15. (1945).] **882**

D.D.T. in 5% solution in oil or as a powder suspended in mucilage is tolerated by the nasal mucosa of sheep, but is ineffective against the larvae of *Oestrus ovis.*—R. MACGREGOR.

I. HEATH, G. B. S., & MITCHELL, J. G. (1946.) **Use of D.D.T. against sheep ticks,** *Ixodes ricinus* **L.**—*Vet. J.* **102.** 130–137. **883**

II. BLAXTER, K. L. (1946.) **Statistical note on tick control experiments.**—*Ibid.* 137–140. **884**

I. Groups of 20–150 Herdwick or Swaledale sheep were dipped in 12 different D.D.T. emulsions at bath concentrations of 0·1 to 2·0% D.D.T. A commercial arsenic, derris, wool grease dip was used as a control. Comparisons were mainly on the basis of tick counts made at ten-day intervals after dipping, although the authors point out that the important factor in assessing values of anti-tick dips is the number of viable ticks shed by the sheep.

Details are given of the formulae and preparation of the emulsions used; they include one cationic emulsion. It was found that a high deposit of D.D.T. on the fleece resulted from treatment with a cationic dip or from treatment of selected parts with acetic acid followed by an anionic dip. Results, expressed as percentages of ticks on control dipped and undipped sheep, were variable, but in 15 out of 27 field trials, the protection achieved was "excellent" or "good" when compared with that given by the control dip.

Examination of physical and chemical data did not give a clear picture of the cause of irregular results, but high deposition of D.D.T. in the fleece appeared to be associated with good protection from tick infestation.

From intensive day-to-day observation of individual ticks on D.D.T.-dipped sheep, it was found that the majority were unable to engorge. The authors suggest that this fact might account for some of the apparent discrepancies in results. They conclude that the large-scale use of D.D.T. as an anti-tick sheep dip cannot be recommended until more information becomes available.

To test toxicity the authors dipped six sheep 13 times during a 41-day period in D.D.T. emulsions at bath concentrations of 0·5%. No ill-effects were observed. Further trials revealed that sheep were not affected by doses of D.D.T. much larger than amounts which might be swallowed during dipping.

II. This is a discussion of the statistical interpretation of results of tick-dipping experiments. B. concludes that the interpretation of tick populations on D.D.T.-treated and normal sheep involves assumptions concerning the mode of action of D.D.T. (possible repellency, speed of kill, etc.) and that the only unequivocal estimates of control must be obtained by the enumeration of viable and non-viable ticks shed by the two groups of sheep.—H. E. HARBOUR.

SCHMID, F., & KRATZ, H. (1944.) "Babera-Insektenmord" als Läusemittel. [**"Babera" insecticide used against lice.**]—*Berl. Münch. tierärztl. Wschr./Wien. tierärztl. Mschr.* Sept. 1st. 285–286. **885**

The insecticide "Babera-Insektenmord" has been effectively used against insect pests of man. The preparation consists mainly of an extract of a waste product containing pyrethrum, thymol and thymianol dissolved in a light mineral oil.

Isolated animal lice suspended over the insecticide became torpid within 15 min. and died within five hours. Over 80% of louse eggs were killed within two hours by a similar treatment. Infested animals should be treated out-of-doors in still weather or, if they are treated in the stall, care must be taken not to contaminate manger and straw. Trials on 19 horses and five cattle were made using approximately 150 ml. per animal, the body being covered with sacks after the material was applied. Detailed results are not given. In resistant cases, the authors advise a further treatment after 14 days, or two further treatments at intervals of a week.—B. THURSTON.

MACLAGAN, D. S. (1946.) **An anti-tick salve for lambs.** [**Correspondence.**]—*Nature, Lond.* **158.** 132. **886**

160 lambs were smeared with (a) 20% dibutyl phthalate and (b) 10% dibutyl phthalate plus 10% D.D.T., both smears being made up with a lanolin base. A very high degree of protection from ticks for one month, and considerable protection for an additional fortnight is said to have been obtained; the two salves were almost equally effective. No figures are offered in support of this claim and control lambs are not mentioned.

—G. B. S. HEATH.

DESCHIENS, R., & MARCHAL, G. (1945.) Sur les propriétés anthelmintiques des oxydes et du benzoate de benzyle. [**Anthelmintic properties of benzyl ethers and of benzyl benzoate.**]—*C. R. Soc. Biol. Paris.* **139.** 351–353. **887**

Using *Rhabditis macrocerca* for *in vitro* tests and *Aspiculuris tetraptera* and *Syphacia obvelata* for *in vivo* tests, the anthelmintic properties of di-benzyl ether, ethyl benzyl ether and benzyl benzoate were examined. It was found that ethyl benzyl ether was the most toxic to mice. Benzyl benzoate showed much less anthelmintic effect but was not more toxic than di-benzyl ether which appeared to be the most suitable substance as an anthelmintic.—J. N. OLDHAM.

WARWICK, B. L., TURK, R. D., & BERRY, R. O. (1946.) **Abortion in sheep following the administration of phenothiazine.**—*J. Amer. vet. med. Ass.* **108.** 41–42. **888**

154 pregnant ewes were given 25 g. each of phenothiazine in bentonite. 23 of them were in

the last three weeks of gestation and 12 of these aborted. Of the remainder, in less advanced gestation, all but six lambed normally, the minority having some undetailed trouble at parturition.

A few similar observations by other workers are referred to; these and the above suggest that only ewes in late pregnancy need to be withheld from phenothiazine therapy.—J. E.

GRIFFITHS, H. J. (1946.) **A summary of the use of phenothiazine in the control of cecal worms and in the prevention of blackhead.**—*Canad. J. comp. Med.* **10.** 218–221. [French summary.] **889**

G. reviews some of the principal work on the use of phenothiazine for the removal of the caecal worm (*Heterakis gallinae*) of poultry. It is considered that, while phenothiazine has considerable value in the removal of these parasites, it has its limitations. Sanitation, hygiene and good husbandry continue to play the major role in control of caecal worms and prevention of blackhead.

—R. GWATKIN.

GYSLER, M. (1944.) Zur Frage der Vitamin-E-Behandlung der Fruchtbarkeitsstörungen des Rindes. **[Vitamin E treatment of bovine sterility.]**—*Schweiz. Arch. Tierheilk.* **86.** 336–341. **890**

On a farm with a history of repeated infection of cattle with *Br. abortus*, treatment of animals with vitamin E (ephynal) caused marked reduction in abortions, although no diminution of infection occurred. Other manifestations of the disease, such as sterility, retention of the afterbirth and production of weakly or sickly calves, are also said to have responded well to treatment. Cows with signs of imminent abortion calved at full term when given increased doses of "ephynal".

—R. MARSHALL.

MEYER, J. R. (1945.) Indícios da existência de uma substancia antineoplásica formada nos líquidos de cultura do "Penicillium notatum". **[Indication of the presence of an anti-neoplastic substance in liquid media in which *Penicillium notatum* has been grown.]**—*Arq. Inst. biol., S. Paulo.* **16.** 307–314. [Abst. from English summary.] **891**

An anticarcinomatous property was demonstrated in Czapek-Dox medium in which *P. notatum* had been cultivated. Small pieces, 3–5 mm. in diameter, of a transplantable tumour of mice were treated at ice-box temperature by this medium for 72 hours: when inoculated into susceptible mice none gave rise to new tumours, while 100% of pieces of the same tumours treated by Tyrode's solution under similar conditions and inoculated into mice resulted in tumours. The inactivation of the tumour pieces was not due to the pure culture medium or to the penicillin as procured in commercial form.

The media were 100% active from the 10th–15th day of culture and were partially active two days before and one month after this period. Their anticarcinomatous action was not impaired by incubation at 100°C. for 30–45 min.

BOTWRIGHT, W. E. (1946.) **A new germicide for the food industries.**—*J. Milk Technol.* **9.** 101–106. **892**

B. points out that in the U.S.A., all utensils in eating and drinking establishments must be submitted to "an approved bactericidal process", either exposure to some form of heat, such as water at 170°F., steam or dry heat, or immersion in a solution of chemical germicide. For a number of years the only satisfactory chemical germicides for food establishments have been the chlorine-liberating compounds. The properties of chlorine, which acts as a sterilizing agent by means of its oxidizing reaction, are discussed.

During the last decade a new group of germicides, known as quaternary ammonium germicides, has been developed. "Amerse" (9-octadecenyldimethylethyl ammonium bromide) has all the attributes of a practical germicide for food utensils: it is greatly superior to chlorine and is less toxic than any other known germicide.

Quaternary ammonium germicides are rapidly gaining preference in the dairy, despite the fact that they are slightly more costly.—D. S. R.

See also absts. **863** (D.D.T.), **864** (phenothiazine).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

WRIGHT, J. G. (1946.) **Veterinary hygiene. Presidential address on the future utilization of veterinary services in agriculture and public health.**—*J. R. sanit. Inst.* **66.** 344–346. **893**

In this address, W. points out the advantages to be derived from a co-ordinated veterinary service for the country, not, however, a complete Government service administered from Whitehall. The Presidential addresses given to the N.V.M.A. for the years 1942 and 1945 are quoted in support.

WRIGHT suggested the formation of a service controlled by a corporate body, appointed by the Government, under the directorship of a veterinarian and in which all interests concerned in the service had representation. There should be urban and rural regional organizations with freedom of action, as the backbone of the scheme. These regional organizations should be run on demo-

cratic lines and decisions as to policy should be the outcome of discussions by a body made up of all veterinary and allied departments within the region. He considers that any curtailment of the liberty of individuals, stockowners and others, would be more than recompensed by the country's gain.—D. S. RABAGLIATI.

TODD, F. A. (1946.) **Milk control program of U.S. forces in Iceland.**—*Bull. U.S. Army med. Dep.* **5.** 461–467. **894**

The milk industry in Iceland is on a co-operative basis, there being milk depots where needed ; a considerable quantity of cheese is made. There are about 40,000 head of dairy cattle on the island and nearly every farmer has one or more cows.

In this article, T. gives an account of the improvements brought about in the milk supply during the occupation of the island from 1941 by the U.S. forces. They instituted improved milk tests, installed fresh pasteurizing plants, carried out visits to farms, introduced improved methods of production and sterilization and carried out tuberculin tests on the cattle. Much educational work still requires to be done, but a good start has been made.—D. S. RABAGLIATI.

I. MULLEN, A. L. (1946.) **The veterinary inspection of dairy cattle in connection with diseases in human beings.**—*J. R. sanit. Inst.* 66. 497–504. Discussion pp. 512–515. **895**

II. GOLDIE, W. (1946.) **The laboratory control of milk-borne disease.**—*Ibid.* 505–512. Discussion pp. 512–515. **896**

I. M. describes the work of the Veterinary Inspector of the Ministry of Agriculture and Fisheries in the veterinary examination of dairy cattle, pointing out his duties under the Food and Drugs Act of 1938 and the Milk (Special Designations) Orders. He points out that all the duties previously imposed on the local authorities under former Milk and Dairies legislation are retained by these authorities, with the exception of the tuberculin-testing of cattle and the veterinary inspection of dairy herds, which duties now fall upon the Ministry.

He then describes the routine of dairy herd inspection, stressing the importance of rapid microscopic examination of milk samples from quarters suspected of TB. and describing the procedure to be adopted when the general milk supply from a farm is suspected of being tuberculous. Amongst other diseases mentioned are brucellosis (at some length), anthrax, foot and mouth disease and acute mastitis. M. concludes by mentioning the diseases of man which, though not originally of bovine origin, may be spread through milk.

In the discussion, DIXON severely criticizes the policy of the Ministry in not following up complaints of bulked milk from several farms containing tubercle bacilli, but expecting the local authorities to lessen the field of enquiry by separate bulk-sampling of the farms implicated. In his reply M. tries to justify the policy of the Ministry in this respect.

II. G. describes the usual laboratory methods of examining milk suspected of conveying disease to human beings. He stresses the value and accuracy of the biological test of milk for TB., but points out that the time lag can be greatly lessened by the culture method, which can give a positive diagnosis in 7–10 days. He deals with undulant fever at some length and discusses the various diseases which may be transmitted to man by milk. As a preventive against these dangers, he recommends pasteurization on a general scale.

In the discussion, emphasis is laid upon G.'s reference to the number of children who, during the recent war, after being evacuated from urban districts, contracted tuberculous meningitis of bovine origin and died. G. mentions that the Medical Research Council investigated the incidence during the war years of bovine type non-pulmonary TB. The result was not yet complete, but there was no reason to assume that the incidence had decreased.—D. S. RABAGLIATI.

DE VINE, W. B. (1946.) **The economic and public health advantages of centralized slaughtering.**—*J. R. sanit. Inst.* **66.** 60–63. **897**

This lecture, given under the auspices of the Model Abattoir Society, is essentially a plea for the centralized slaughtering of food animals. The author points out that in the period between the two great wars, more interest was taken in meat inspection and several new and useful regulations were made. Amongst these, the Slaughter of Animals Act, 1933, provided for the uniform slaughter of animals throughout Great Britain.

In 1932, the City of Coventry opened a public abattoir, closing all its private establishments at the end of January, 1933. During the recent war the 1,600 private and 130 public abattoirs were reduced to 512 slaughtering centres with great advantage. [This presumably applies to the number for England and Wales only.]

Great economy in man-power, uniformity of inspection and slaughtering methods, increased efficiency in inspection, better cold storage, economy of by-products and the saving of much useful offal for medicinal purposes, as well as more economic utilization of condemned meat, are all secured more readily by centralized slaughtering.

—D. S. RABAGLIATI.

FAULENBORG, G. (1945.) Laboratorieundersøgelser i Kødkontrollens Tjeneste. [**Laboratory**

work in connexion with meat inspection.—*Maanedsskr. Dyrlaeger.* **57.** 429–450. **898**

F. calls for a more extensive use of bacteriological examination in such cases as mastitis, metritis and retained placenta, as well as in other conditions where bacteraemia is suspected. The technique used to isolate and identify salmonella from commercially prepared food of different kinds is mentioned, but no results are given.

In the kidneys of tuberculous cattle small lesions are sometimes found, which macroscopically are very much like miliary tubercles, but which by histological examination can be shown to be non-tuberculous. In such cases, the carcasses need not be condemned. In most cases, a more lenient judgment followed laboratory examinations than would have been given as a result of macroscopic examination alone.

—H. C. Bendixen.

Thornton, H. (1946.) **Pathology in its relation to meat inspection.**—*J. R. sanit. Inst.* **66.** 347–351. Discussion pp. 351–354. **899**

This is largely a historical account of meat inspection. The common pathological conditions met with by meat inspectors are dealt with in the usual way, and T. suggests that, especially with the present food shortage, the regulations in Great Britain for dealing with tuberculous carcasses be revised. He suggests that much meat could be sterilized and sold to the public as such.

In the discussion that follows, Tweed and others criticized this suggestion as impracticable. Clayton raised the question of passing carcasses affected with traumatic pericarditis when no signs of septicaemia or other serious complications were present, but considered that on the whole this would be disadvantageous: samples from the lesions would have to be sent to the laboratory for examination first and this might not always be possible. Criticism was also raised against the little use made of bacteriological examination of meat at abattoirs in Great Britain. T. stated that meat inspection had improved under the Ministry of Food scheme for the concentration of slaughtering.—D. S. Rabagliati.

O'Connor, P. (1946.) **Veterinary services in a zoo.**—*J. Amer. vet. med. Ass.* **108.** 303–309. **900**

This is a short, semi-popular account of the Staten Island Zoo, New York, and in particular of the arrangements made for veterinary attention to the animals. The zoo has a whole-time veterinary officer and the buildings include a laboratory, hospital, library, study rooms and a lecture theatre with seating capacity of 400. A plea is made for the adoption of a uniform system of recording mortality and causes of death in zoos.

Diagnostic tests are claimed to have eliminated TB. from the collection.—M. C.

U.S.A. (1945.) **Laws and regulations pertaining to livestock sanitary control work.** pp. 80. Bismarck, N. Dakota: North Dakota Livestock Sanitary Board. **901**

This booklet provides in compact form the laws concerning the control of livestock diseases. The composition, duties and powers of the Livestock Sanitary Board and its various officers are listed. The laws governing the penalties for infringements of regulations, the rates of compensation for destruction of diseased animals, the levying of fees for inspection, testing, dipping, etc., the sale of sera and vaccines and the inspection of livestock markets, etc., are stated. In addition, the special regulations concerning imports of livestock into the U.S.A., and the control of glanders, TB., brucellosis, mange, anthrax, rabies, swine fever, swine erysipelas and pullorum disease which were in force in March, 1945, are given. These are followed by short directions giving advice on the disinfection of premises and methods for collecting and forwarding samples for laboratory examination.—M. C.

Berthelon, M. (1944.) Le programme d'enseignement théorique de la VIIIe chaire. Orientation nouvelle. [**The syllabus of the VIIIth chair (symptomatology, animal pathology, obstetrics) at the Veterinary School, Toulouse.**]—*Rev. Méd. vét., Lyon et Toulouse.* **95.** 80–86. **902**

The work of the Department is at present confined to the study of the pathology of farm animals other than horses and dogs. As the low value of the individual animals renders treatment unremunerative, and as epizootic diseases are dealt with by other professors, the pathological material available is limited.

It is proposed, therefore, to specialize in obstetrics, infertility, deficiency diseases and correlated subjects which offer a wide and important field for study. The pathology of other diseases of farm animals will be distributed among the other professors.—R. Macgregor.

See also absts. **743** (streptococci in milk), **761** (diphtheria spread by milk), **815** (cysticercosis and meat inspection), **816**, **817** (echinococcus and meat infection), **819** (trichinosis), **916** (bovine TB. in man).

ZOOTECHNY

Lourcs, B. (1944.) O boi asiático como fator econômico na zona da mata. [**Asiatic oxen as an economic factor in Brazil.**]—*Campo, Rio de J.* **15.** No. 176. 41–44. **903**

Some unsuccessful early attempts at cross-breeding Indian stock with Brazilian gave rise to the belief that the resulting cross-breds would degenerate. This is now disproved, as large herds of Brazilian stock cross-bred with Nellore, Gujerat and Gir cattle exist in the mountains in a feral state. They are reputed to be extremely savage and are killed by hunters; but they prove that crossing does not result in degeneracy. Unfortunately, all record of their origin has been lost. A cow of the Gir breed, "Esperance", was sold 40 years ago as a curiosity for $1,500; there are now said to be over 40,000 of her descendants. Many other successful strains of Gir have now been recorded.—R. MACGREGOR.

TECHNIQUE AND APPARATUS

BURTT, E. (1946.) **Salivation by *Glossina morsitans* on to glass slides: a technique for isolating infected flies.**—*Ann. trop. Med. Parasit.* **40.** 141–144. **904**

Dissection of tsetse flies for the detection of *T. rhodesiense* infection having proved unreliable, and feeding methods being slow and laborious, the value of examining salivary slide preparations was tested against the feeding method and it was found that, if the saliva test was repeated after ten days, no infections were missed which were detected by feeding.

Flies are first tested for hunger, by holding a g. pig near them. A bottle containing the hungry fly is clamped, mouth downwards, in a burette stand, and a g. pig is brought close to the mosquito netting covering the mouth of the jar. As the fly attempts to bite, the g. pig is withdrawn and a slide lightly smeared with albumen is presented, on which the fly deposits its saliva. The slide is then allowed to dry, fixed in absolute alcohol, dried in air and stained by Giemsa's method.

The presence of the saliva track on the slide can be seen by reflected light. The albumen on the slide assists in locating the saliva track after staining, as the albumen stains blue and the saliva colourless or purplish or reddish-pink.—U. F. R.

HENDERSON, W. M. (1944.) **A consideration of some of the factors concerned in intracutaneous injection of cattle.**—*J. Path. Bact.* **56.** 315–325. **905**

H. describes a series of experiments demonstrating the mechanics of intracutaneous inoculation. The corium has a rich plexus of lymphatic vessels which receive the inoculum and convey it to the associated lymph node, in which it can be detected less than a minute later. No such plexus exists in the subcutis which may retain for several hours all or part of an inoculum given subcutaneously. The lymph node affected by an intracutaneous inoculation usually arrests it, so that it is probable that subsequent distribution of the inoculum through the system takes approximately the same time by both routes. Usually, the more convenient subcutaneous route is indicated, but when the result required is a rapid involvement of the lymphatic system, the intracutaneous route is preferable; as also when the volume of antigen to be introduced is relatively small. It requires a pressure of 30 lb. per sq. in. to introduce 5 ml. of pure liquid or a suspension of finely divided solid (*e.g.*, indian ink) intracutaneously into the side of the neck of cattle, and rather more for a viscous fluid (*e.g.*, olive oil). This pressure can be obtained with a syringe fitted with a power screw on the piston rod, the piston itself being smeared with vaselin. In the caudal fold, only half the pressure is required, but the site is not usually convenient. The resulting swelling is proportional to the volume injected and disappears rapidly if an innocuous fluid is used. An irritant fluid causes a local reaction that may persist for some weeks, but will not develop in time to prevent the inoculum being conveyed to the node. —R. MACGREGOR.

See also absts. **784** (fluorescent microscopy), **847** (investigation of nutrition).

MISCELLANEOUS

—. (1945.) **Proceedings of Conference of Veterinary Representatives of Far Eastern Member Governments of UNRRA and of the Military Commands, held at 52 William Street, Sydney, Australia, on 14th, 15th, and 17th December, 1945.** pp. 82. Sydney, N.S.W.: United Nations Relief and Rehabilitation Administration, Southwest Pacific Area. **906**

The conference, under the chairmanship of the Acting Director of UNRRA, South-West Pacific area, was attended by representatives from Australia, China, India, the Dutch East Indies, New Zealand, the Philippines and the U.S.A., and by the military representatives of the Pacific and South-East Asia Commands. A veterinary advisory committee, consisting of five Australian veterinarians with DR MAX HENRY as chairman, had assisted in the preparatory work of the conference.

The collection and dissemination of information on the incidence of epizootic diseases of livestock in the member countries were discussed. The possible collaboration of the *Office Internationale des Epizooties* in this work was mentioned.

It was resolved that the secretariat should publish monthly statistical bulletins similar to those formerly published by the *Office Internationale des Epizooties*, that notice of the occurrence for the first time of scheduled diseases should be furnished to the secretariat by the constituent countries by cable, and that the secretariat should not confine its activities to problems of disease, but should also deal with the breeding and feeding of livestock.

A schedule of notifiable diseases was agreed upon and the form and scope of health certificates to be used when livestock were exported was discussed. Extracts from a number of League of Nations publications dealing with international trade in livestock and livestock products and with epizootic diseases are reproduced in the report.

—M. C.

I. ANON. (1945.) **Associated serum producers win anti-trust suit. Sales-to-veterinarians-only policy vindicated.**—*J. Amer. vet. med. Ass.* **106.** 179. **907**

II. ANON. (1945.) **Summary of the suit against associated serum producers.**—*Ibid.* 243–251, 310–317 & 385–392. **908**

On February 16th, 1945, in the Federal Court for the northern district of Illinois, the Associated Serum Producers, Inc., comprising 14 member companies and 21 individuals were acquitted of alleged conspiracy to restrict the sales of swine fever antiserum and virus, in violation of the Act of Congress of July 2nd, 1890, commonly known as the Sherman Act. The case was of great importance to veterinary surgeons in the U.S.A. and elsewhere and equally interesting from the legal side.

The charge originally covered "all animal medicines and supplies", but was later narrowed to include the swine fever antiserum and virus only. It was alleged that the companies had all agreed to sell their products to veterinary surgeons only and not to the farming community directly, thereby restricting the sales.

Apparently, under U.S. law, each of the companies, acting independently and individually, could make such arrangements without infringement of the law, but if the same companies conspired to do so conjointly, it would be conspiracy against the Act. The report of the case filled 1,200 type-written papers, and 800 pages of the testimony of witnesses. It was pointed out that while some companies sell their products directly to the layman, others deal only with members of the veterinary profession: further, that the serum and virus method of preventing swine fever is very efficacious when properly used, but may become a danger to the community if improperly controlled. One witness urged that even in professional hands every dose of the virus should be accounted for.

It was found that the companies had agreed to the method of distribution before they had amalgamated and that, even although they continued with the same system, they in no way interfered with the business of the other companies selling to the farmers direct.

The judge, in his summing-up, pointed out that if the defendants had combined to restrict the sales, but had only done so reasonably, even if the sales had in fact been so restricted, the jury should not find the accused guilty, but if the restraint were not "reasonable", then they should bring in a verdict of guilty. The jury, after a retirement of only about half an hour, returned a verdict of "not guilty" and the accused were acquitted.

—D. S. RABAGLIATI.

REPORTS

CANADA. (1945.) **Report of the Ontario Veterinary College, 1944.** [MCGILVRAY, C. D.] pp. 32. Toronto: T. E. Bowman. 8vo. **909**

There were 113 students enrolled for the five years' course for B.V.Sc. Short courses were provided on public health and fur breeding and there was also a refresher course for veterinarians.

In extension work on BOVINE BRUCELLOSIS, 48,493 head of cattle in individual herds were tested; 31·63% gave positive and 10·32% doubtful reactions. Among dairy cattle tested for export, 7,736 cows gave 3·36% positive and 2·76% doubtful reactions. 52,603 calves, 4–8 months of age, were vaccinated. There are 1,029 herds in the Prescribed Areas, totalling 17,716 head of cattle; 4% reacted positively and 4% were doubtful.

Research was carried out on BOVINE MASTITIS, in which penicillin has given encouraging results; on HAEMORRHAGIC SEPTICAEMIA in pigs, for which a simple and reliable laboratory method of diagnosis has been developed; on SALMONELLOSIS in pigs, which has been shown to be widespread in the Province and is a serious cause of losses, and for which bacterins proved valuable in treatment, and on poisoning which occurred in a herd of 40 pigs after the use of "ceresan" to disinfect grain prior to spring sowing. EQUINE ENCEPHALOMYELITIS occurred in two new areas: vaccination gave good results.

A table shows the results of examination of 400 specimens by the Pathological Laboratory service. The table showing the results of examination of 1,659 specimens by the Bacteriological

Laboratory service includes 1,221 from cases of BOVINE MASTITIS. The 3,269 specimens examined by the Poultry Disease Laboratory service included 1,217 from cases of PULLORUM INFECTION, 636 from COCCIDIOSIS, 439 from nutritional conditions, 160 from OMPHALITIS associated with PULLORUM DISEASE, and 235 from cases of HELMINTH INFESTATION.

5,316 test doses of *Br. abortus* antigen were distributed to veterinarians by the Biological Laboratory service, as well as 252,350 doses of FOWL POX vaccine. 84,694 bovine blood tests revealed 28,341 cattle infected with *Br. abortus*. 600 samples of milk were also tested.

A report of comparative studies of various Br. abortus *antigens* [GLOVER, J. S., & DURRELL, W. B.] states that samples were obtained of the antigens used in the U.S.A. and Canada. These varied in density, hydrogen-ion concentration and agglutinability. The results show that they are all reasonably satisfactory for brucellosis testing, although interpretations might vary if complete agglutination up to 1 : 50 is considered suspicious or doubtful and up to 1 : 25 only as a negative reaction.—J. A. GRIFFITHS.

U.S.A. (1944.) **New York State Department of Health. Annual report of the Division of Laboratories and Research, 1944.** [WADSWORTH, A. B.] pp. 107. Albany: New York State Department of Health. Items of veterinary interest pp. 11, 12, 22, 32, 33, 45, 55 & 58. **910**

In routine investigations of the protective activity of the sera of non-immunized rabbits against some of the virulent types of pneumococci, a few rabbits were found to have protective activity against Types 8 and 29; two protected against Type 4 and one against Type 1. None of the others tested protected against Types 1, 4 and 5 and only one against Type 18. Bacterial strains which produce the enzyme capable of splitting pneumococcus Type 8 carbohydrate have been cultivated for some years, and new strains have been isolated from soil which regularly produce an enzyme which protects against pneumococcus Type 8 infection. These specific enzymes have not proved identical. A study is now in progress of antisera produced in rabbits immunized with enzymes that split Type 3 pneumococcus carbohydrate. Each antiserum has a neutralizing effect on its homologous enzyme.

Study of the effect of normal serum in neutralizing the activity of antibiotic substance produced by strain 4205 has been continued. In tests with pneumococci, protection followed injection into the mouse of culture and bactericide, together in one syringe. The addition of 0·2 ml. of normal serum to the bactericide before mixing with the culture prevented protection. *In vitro* tests with poured plates of 2 ml. of pneumococcus Type 1 culture diluted 1 : 500 mixed with 2 ml. of bactericide diluted 1 : 5,000 gave negative results. Similar tests with *Bact. coli* or *Bacillus mucosus capsulatus* and staphylococcus indicated that these organisms were not killed rapidly.

No evidence of PARATYPHOID was recognized in 1,200 P.M. examinations on mice.

Bacterial infections of rabbits were limited to respiratory disease associated with *Br. bronchiseptica* and *Past. lepiseptica*.

No cases of FOLLICULAR MANGE occurred in goats.

During the past two years, RABIES spread among animals in New York State and caused concern throughout the country. One case in man was recorded. The patient refused treatment and died 89 days after being bitten.

PRIMARY BRONCHIAL CARCINOMA was diagnosed in a rabbit. The tumour appeared to have arisen from the bronchi of the right lung. Histological examination showed it was an epithelial tumour simulating bronchial carcinoma in man.

Eight ferrets died from LEAD POISONING after painting of the cages. Diagnosis was based on blood examination.

On the laboratory farm five horses died and 14 were destroyed as unsuitable for further immunization. Liver degeneration was present in five: two had been used for the production of diphtheria antitoxin and two for tetanus antitoxin, the other horse had been used for meningococcus antiserum production. In one of the horses producing tetanus antitoxin there was internal haemorrhage following rupture of the liver capsule. One horse died from shock after injection of pneumococcus Type 1 culture. One horse being immunized for diphtheria antitoxin production died two days after subcutaneous injection of toxin. Four horses were destroyed after having symptoms of shock following diphtheria antitoxin inoculation. Paralysis of the pharynx was present in two of these horses and a third had acute focal myocarditis.

120 tests were made by the copper sulphate method of the protein content of sera of various species, using 3–4 drops of plasma or serum: temperature controls were unnecessary and the copper sulphate solutions of varying specific gravity were easily prepared. The results were in close agreement with protein determinations made by refractometric and chemical methods.

The cardiolipin antigen developed by PANGBORN (1944–45) has given promising results. Special studies of precipitin tests with cardiolipin are in progress.—J. A. GRIFFITHS.

U.S.A. STATE OF NEW YORK. (1945.) **Report**

of the New York State Veterinary College at Cornell University for the year 1943-1944. [FINCHER, M. G.] pp. 137. Geneva, N.Y.: W. F. Humphrey Press Inc. 8vo. **911**

The Army specialized training programme was conducted for three semesters. This accelerated course of study for students of veterinary medicine commenced 28th June, 1943, and terminated 24th June, 1944. A total of 139 undergraduates was registered in June, 1944.

[REPORT OF THE] DEPARTMENT OF PATHOLOGY AND BACTERIOLOGY. [EVANS, W. M.] The diagnostic laboratory examined 227,622 specimens of specific infectious diseases. They performed 227,344 agglutination tests for BOVINE CONTAGIOUS ABORTION. Twelve cases of ANTHRAX, 30 of BOVINE MASTITIS, one of BOVINE TUBERCULOSIS and three of BLACKLEG were diagnosed. There were 83 cases of RABIES, including 60 dogs, six cats, eight foxes and nine cows. Specimens from non-infectious diseases numbered 1,843 and included 1,267 bacteriological examinations of milk and 392 specimens of tissues. Of the 15 tumours examined, 12 were from dogs, one from a horse, one from a cat and one from a cow.

REPORT OF THE POULTRY DISEASE LABORATORY AT FARMINGDALE, L. I. [HILBERT, K. F., & BLUM, I. P.] The approved veterinary laboratories of New York State were supplied with 226 litres of pullorum antigen. 1,171,873 doses of fowl pox vaccine were issued to veterinarians and 144,605 doses of pigeon pox vaccine for use on farms. Specimens received for examination included 810 chickens under three months; 1,381 over that age and 95 other birds. The laboratory dealt with 6,781 specimens and prepared 2,082,250 ml. of duck cholera bacterin. An investigation of duck diseases on Long Island revealed that during 1939–44 DUCK CHOLERA [PASTEURELLOSIS] accounted for 44·7% of the total number of birds autopsied. The highest losses occurred during May, June and July and the lowest in October. Losses during the same period from *Pfeifferella pestifer* infection were 28·7% of the total, the highest losses being in March and April and the lowest in October and November. Salmonella infection accounted for only 4·5% of the total.

—J. A. GRIFFITHS.

HOLLAND. (1945.) Zes en twintigste jaarverslag 1 Mei 1944–30 April 1945. Mededeelingen betreffende den gezondheidsdienst voor vee in Friesland. [**26th annual report, May 1st, 1944 to April 30th, 1945, on the animal health service in Friesland.**] pp. 17. 8vo. **912**

The activities of the service had to be curtailed somewhat in the year under review. However, work on BOVINE TUBERCULOSIS suffered little and tuberculin tests were carried out in 14,138 herds containing a quarter of a million cattle. Reactors numbered 9,365 (3·6%). Herds which were free of TB. numbered 11,600. Only 800 herds were not enrolled in the control scheme. The increasing number of young cattle born on the farms had a beneficial effect on the reactor percentage, only 0·2% of bovines under one year of age reacting. A report is also given on other diagnostic tests for TB. 66 out of 3,305 sputum samples were positive.

An experiment to test the survival time of tubercle bacilli in cheese revealed that they could survive for four and a half months in a pathogenic state, as tested by g. pig inoculation.

Work on the control of JOHNE'S DISEASE, BRUCELLOSIS and INFERTILITY could not be given the customary attention and there was nothing significant to report.

Notes are given on PARASITIC GASTRITIS in heifers, possibly complicated by MINERAL DEFICIENCY, and on PHOSPHORUS POISONING in heifers as a sequel to the bombing of military objectives near Waddenzee. Curiously, sheep grazing with the cattle were not similarly affected.—J. E.

BOOK REVIEWS

DAVIES, G. O. [D.V.Sc., M.R.C.V.S., D.V.H., Senior Lecturer in Charge of Department of Veterinary Pathology, University of Liverpool]. (1946.) **Gaiger and Davies' veterinary pathology and bacteriology.** pp. viii + 796. 203 figs. London: Baillière, Tindall & Cox. 8vo. 3rd Edit. 30s. **913**

Veterinary students and pathologists will welcome this new edition of "Gaiger and Davies". In the preparation of the third edition, opportunity has been taken to revise and enlarge most sections, with the production of a sound and clear textbook, a reliable source of information on such varied aspects of veterinary science as general pathology, special pathology and diseases caused by bacteria, viruses, fungi and protozoa. The appendix, as formerly, gives much valuable technical information, including the bacteriological tests for graded milk. A useful discussion on pathogenesis and routes of infection has been introduced and the question of virulence has also been considered. A table included in the enlarged section on the streptococci will help the reader with the classification of this important group. Among the other sections which have been expanded to include recent developments are those on the coliform organisms, the salmonellas, brucellosis, and TB. and tuberculin testing. The chapters on virus in-

fections cover this important field in a very satisfactory manner. Useful information on the properties and sizes of viruses is provided, together with new sections on swine influenza and Aujsezky's disease. The appearance of the section on bovine trichomoniasis will serve to emphasize the importance of this problem. Current advances in research may already indicate the need for minor adjustments in future editions, but this text, as revised by DAVIES, will faithfully serve the present needs of veterinarians; especially will it be the student's friend.—J. KEPPIE.

BRION, A. [Professeur de Clinique Médicale et de Jurisprudence à l'École Nationale Vétérinaire de Lyon]. (1943.) Précis de jurisprudence vétérinaire. **[Outline of veterinary jurisprudence.]** pp. 386. Paris: Vigot Frères; Lyon: Librairie Médicale. 8vo. **914**

This book contains such a wealth of information that it is extremely difficult adequately to review it in a few lines. The author has succeeded in dealing in detail with veterinary jurisprudence as it affects France, and the work must be of equal interest to jurists as to members of the veterinary profession. It is divided into six parts, each comprising several chapters, to which are added an appendix and two indexes, one alphabetical.

The author commences by describing the French legal code and its operation as regards the civil courts. A special chapter in this section is devoted to evidence as it affects the veterinary profession. The second part of the volume deals with the law relating to the sale and purchase of animals and appears to deal with every conceivable type of contract, such for example, as the possibility, under the heading "Ventes sous condition suspensive", of selling a horse on the condition that the purchaser find sufficient fodder for it in a week, or the sale of a pair of oxen on condition that the seller find a suitable horse to replace them at their work. Rather surprising is the statement in this chapter that an owner of an animal can, if he so wishes, submit it to all forms of bad treatment and cruelty on his own premises, but not on the public highway.

The question of animals being affected with contagious disease at the time of sale is dealt with in great detail. The diseases considered contagious in this connexion are rabies, rinderpest, bovine contagious pleuro-pneumonia, blackleg, anaplasmosis in cattle, certain forms of TB., sheep pox, *Br. melitensis* infection in sheep and goats, mange in sheep, goats and the Equidae, foot and mouth disease, glanders, dourine, swine erysipelas, porcine infectious pneumo-enteritides [swine fever ?], equine infectious anaemia, certain diseases of bees and psittacosis in all kinds of birds.

The third part of the book deals with the responsibility of owners for damage caused by their stock and, conversely, their right to claim damages for injuries or neglect caused by other people, including their veterinary surgeons.

The fourth part concerns the medico-legal aspect, including the diagnosis of contagious disease, and a whole chapter is devoted to bovine TB. and tuberculin testing. The fifth part describes the law regarding insurance of animals and the sixth and final part deals with the veterinary profession pure and simple, detailing its government and etiquette.

The appendix gives a large number of examples of legal reports, the phraseology suggested and forms of contract for both the layman and the profession.

The work is clearly printed, and is divided into numbered paragraphs which can easily be found on reference to the indexes. No veterinary surgeon practising in France can afford to be without a copy and to those in other countries it is a source of great interest and considerable utility.

—D. S. RABAGLIATI.

BURROWS, H. [C.B.E., Ph.D., F.R.C.S.] (1945.) **Biological actions of sex hormones.** pp. x + 514. London: Cambridge University Press. 4to. 42s. **915**

It is now six years since a comprehensive review of the endocrinology of reproduction appeared, and the ever-accumulating literature makes desirable a new work of reference in this field. This book is intended to make good this deficiency and to give a "co-ordinated summary of experimental enquiries in this field".

The title of the book signifies precisely its scope. The hormones are considered individually as regards their nature and the reactions of living tissues towards them. The gonadotropins are considered in four chapters dealing with their nature and function, the factors influencing the gonadotropic activity of the pituitary, the reaction of the gonads to gonadotropins and the cytology of the pituitary. There follow sections on the gonadal hormones. After one chapter giving a general view of the gonadal hormones are five chapters on the androgens, in which are considered their actions on the sex organs before and after complete differentiation and their actions on other organs. The oestrogens are dealt with in a similar fashion in ten chapters, one of which deals with factors in the causation of mammary cancer. There are two chapters on the progestogens and one chapter on the sex hormones of the adrenal cortex. The bibliography, consisting of over 2,000 references, covers the literature to the end of 1943.

The above arrangement has undoubted

advantages when the book is being used for reference purposes, but owing to the complex interrelations of the sex hormones, it rather obscures the integrated picture of the endocrinology of reproduction.

The biology of the sex hormones is now a very wide field and no author can be expected to write authoritatively on all aspects. It is not therefore surprising that in certain chapters the author has contented himself with outlining, often in considerable detail, the relevant experiments and has left the reader to draw his own conclusions, while in other sections he has been critical and authoritative, thus helping the reader to assess the data.

The veterinarian will find disappointingly few references to the domestic animals and those that are given are not as up-to-date as might have been expected, *e.g.*, the vague statement on page 6 that the gonadotropin in the blood of pregnant mares is produced by the pituitary. The introduction of unusual terms such as "galactogen", "mammatropin", and "follicle-ripening hormone (FRH)" would appear unnecessary and liable to confuse readers, although there may be some justification for preferring the last of the three terms to the now well established term "follicle-stimulating hormone (FSH)". These, however, are minor points and the author must be congratulated on his achievement in producing such a comprehensive review on such a wide and difficult subject. The book will undoubtedly be welcomed by research workers and clinicians specializing in this field. The general reader may, however, find it less satisfactory, since the method of presentation presupposes some considerable knowledge of the endocrinology of reproduction.

—A. T. Cowie.

van Loy, A. [Dr.] (1941.) Uw kind en de gevaren der rundertuberculose. **[Your child and the dangers of bovine TB.]** pp. 46. Amsterdam: Scheltema & Holkema. 8vo. 75 cents. **916**

The introduction contains a most vivid and pathetic description of the agonies suffered by a little girl who died from cerebral meningitis due to the causal organism of bovine TB.

Chapter I records briefly the discovery of the bacillus and points out that in man the disease due to the bovine type is a serious and fatal malady affecting chiefly the bones and joints. Data showing the incidence of bovine type TB. in children in Scotland, England, Denmark, Switzerland and Holland are given. The percentage of cases of cerebral meningitis due to the bovine type is very high (46%).

Chapter II deals with the measures successfully adopted in Holland for the control and treatment of TB. in man. The death rate from TB., which was 14·2 per 10,000 in 1913, dropped to 4·15 in 1939.

Chapter III deals with measures for the control and eradication of TB. in the herds of Holland, by means of a voluntary campaign conducted by cattle owners under the direction of the State Veterinary Service. Tuberculin is issued free to veterinary surgeons, who are paid one shilling per head tested. Examinations of the discharge from reactors are carried out free of charge by the State Veterinary Service. Concerns associated with the wholesale trade in milk have assisted by paying a premium for milk from TB.-free herds and have refused to handle the milk of producers outside the scheme.

In 1934 the Government decided to establish an economic balance between the production and sale of dairy products and an association was formed to purchase and slaughter stock. Through this association 20,000 reactors were slaughtered. This is claimed to have contributed largely to the decrease in the incidence of bovine TB. in Groningen, Friesland and Drenthe.

The writer deplores that in 1938 and 1939 the Ministry of Social Affairs would not allow the inclusion of more than 20% of reactors in the total number of cattle bought for slaughter and canning, under suitable safeguards, for feeding the unemployed. A great opportunity to kill off more tuberculous animals was lost. He suggests that the reactors be killed off when a shortage of cattle feed compels slaughter and that the Cattle Diseases Control Ordinances should be amended accordingly to ensure that the tuberculous animals are slaughtered.

Mention is made of the increase in TB. from 13·9 to 20·25% following the first world war; a proportionally greater increase may follow the recent war.

In conclusion, it is recommended that all cattle should in future be tested regularly and all reactors slaughtered. The boiling of milk for human consumption, especially for babies, is advised, as the author states that he had doubts about the efficiency of pasteurization. The book is written persuasively for the lay reader. In preparing this review, the author's approach to the subject in this respect has been ignored, but nevertheless this is an important feature of the book.—P. L. leRoux.

See also abst. **901** (laws and regulations pertaining to livestock sanitary control work).

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